Digitized by the Internet Archive
in 2013

http://archive.org/details/transactionsstud4351coll

TRANSACTIONS & STUDIES

of the

College of Physicians

of

Philadelphia

FOURTH SERIES

VOLUME 35

1967–68

WAVERLY PRESS, INC.
Baltimore, Md. 21202

The College of Physicians of Philadelphia does not assume responsibility for statements or views expressed by contributors to the *Transactions & Studies*. The editor checks bibliographic references, to aid in making them factually reliable, and occasionally supplies headings in the text, to facilitate reference to clearly defined portions of the text; the communications are in other respects printed exactly as they were submitted, subject to author corrections on the galleys.

An index to the annual volume of the *Transactions & Studies* appears in the fourth and final (April) number of the volume.

The communications pertinent to their respective fields are indexed in: *Biological Abstracts; Chemical Abstracts; Index Medicus.*

The Transactions & Studies of the College of Physicians of Philadelphia is published four times a year—July, October, January, April—at Baltimore, Maryland by the College of Physicians of Philadelphia. Subscription, $5.00 a volume. Single copies, $1.25.
Publication Office: Mt. Royal and Guilford Aves., Baltimore, Md. 21202. *Editorial correspondence* should be addressed to: The Editor, College of Physicians of Philadelphia, 19 South 22d Street, Philadelphia, Pa. 19103. Entered as second class matter June 21, 1938, at the Post Office at Baltimore, Md., under the act of August 24, 1912.
Printed in U. S. A.

Contents

No. 1, July 1967

The Medical Mission Sisters (*Kate Hurd Mead Lecture XVIII*) Sister M. Regis Polcino 1

Social Goals in Public Health (*James M. Anders Lecture XLVI*) William H. Stewart 26

Dr. Cadwalader Evans (1716–1773): Physician and Friend of Benjamin Franklin ..... Randolph Shipley Klein 30

The Therapeutic Experience of Mr. Henry Jones Elliott M. Heiman 37

Memoirs:

Paul C. Colonna (1892–1966) ..... Edgar L. Ralston 41

Russell Richardson (1882–1966) ..... Truman G. Schnabel 44

No. 2, October 1967

Invitation to the Gout (*Theodore Franklin Bach Memorial Lecture II*) Gerald P. Rodnan 47

Benjamin Hornor Coates, M.D. (1797–1881): A Study Based on His Manuscripts ..... Marian S. Carson 63

The College of Physicians of Philadelphia ..... Francis C. Wood 69

Memoirs

Josephus Tucker Ullom (1877–1965) ..... William U. McClenahan 74

Robert Spencer Stone (1895–1966) ..... Eugene C. Pendergrass 76

Irvin Elmer Deibert (1893–1967) ..... Harold D. Barnshaw, Sr. 77

Transactions of the Philadelphia Neurological Society 81

No. 3, January 1968

Dr. William Rimmer and His *Art Anatomy* ..... Fred B. Rogers 89

The *Mémoire sur les différents genres d'asphyxica* of Doctor Jean-Francois Coste ..... Harold J. Abrahams and Marion B. Savin 96

Reynell Coates (1802–1886): Politician, Poet, Editor, Naturalist, Lecturer and Physician ..... William J. Snape 112

Dr. Samuel Duffield (1732–1814): Member of the First Medical Class Graduated in America ..... Randolph Shipley Klein 119

Memoirs

Karl Musser Houser (1893–1967) ..... Jacob H. Vastine 126

Douglas Macfarlan (1886–1966) ..... Frederic H. Leavitt 129

Harold Frederick Robertson (1900–1966) ..... Elizabeth Kirk Rose 131

No. 4, April 1968

180th Anniversary Reception: President's Address. FRANCIS C. WOOD 133

Air Pollution: A Community Health Forum (*James M. Anders Lecture XLVII*) 144

Lessons on Pain Control from Electrical Stimulation (*S. Weir Mitchell Oration XVIII*) . . . . . WILLIAM H. SWEET 171

James Minor, M.D. (1785–1828): The Correspondence of a Medical Student, 1803–1807 . . . . . JOSEPH IOOR WARING 185

Third S. Weir Mitchell Associates Banquet 190

"Finances Is Fun" . . . . . PRESTON A. WADE 191

Memoirs

Edward Thomas Crossan (1890–1966) . . JOSEPH L. BEARDWOOD, JR. 198

Damon Beckett Pfeiffer (1878–1966) . . . . . J. MONTGOMERY DEAVER 200

James Ewing Cottrell (1898–1967) . . . . . EDWARD ROSE 201

John A. Brooke (1874–1967) . . . . . WILLIAM L. MARTIN 203

Annual Reports

President's Address . . . . . FRANCIS C. WOOD 204

Secretary, 206; Treasurer, 208; Library, 212; Mutter Museum and College Collections, 229.

List of College Lectures, 1967 231

Transactions of the Sections 232

Officers, Committees, Sections and Administrative Staff of the College, 1968 234

List of Fellows 239

Suggested Form of Bequest 263

Index to Volume 35 264

TRANSACTIONS & STUDIES

of

The College of Physicians of Philadelphia

Volume 35 (Fourth Series)

Number 1 (July 1967)

The Medical Mission Sisters

Their Founder, Mother Anna Dengel, M.D., and Their Role in the Historical Evolution of the Medical Mission Apostolate[1]

By SISTER M. REGIS POLCINO, S.C.M.M., M.D.[2]

Introduction

THE HISTORICAL PAST is but the prologue to the present and the future. Therefore, great and new events in any field of life can best be understood and correctly evaluated only when seen in the light of their historical evolution. No doubt, the discerning historian of the future who reviews the first half of this century will give a prominent place to both Protestant and Catholic medical missions. This ministry of healing will rank as a major force and contribution of Christendom to the now developing nations of Asia and Africa.

To better appreciate and understand the historical evolution of Catholic medical missions and the unique foundation and organization of the Society of Catholic Medical Missionaries—commonly known as Medical Mission Sisters—by Doctor Anna Dengel in 1925, it is necessary to have some knowledge of Protestant medical missions as background.

[1] Kate Hurd Mead Lecture XVIII, Section on Medical History and the Woman's Medical College of Pennsylvania, The College of Physicians of Philadelphia, 18 April 1967.

[2] Society of Catholic Medical Missionaries, 8400 Pine Road, Philadelphia, Pennsylvania.

Protestant Medical Missions

Prior to the twentieth century, Protestants had been the only ones who had made a concerted effort to organize medical missions. Later we will show how much of the impetus for the organization of Catholic medical missions came from two converts, Dr. Agnes McLaren and Dr. Margaret Lamont, both of Scottish Presbyterian families.

Dr. Edward M. Dodd in his book, *The Gift of the Healer*, goes on to say about medical missions:

> The story of medical missions, the Christian ministry of healing, portrays the thrilling advance of modern medicine in the service of mankind and the growth of a Christian community around the world. It is a relevant part of the history of the science and art of medicine in our day; it belongs in the record of the growth of education in the world; it also shares in the development and advance of certain peoples to mature stature. Finally, it is a description of a warm and growing brotherhood around the world.

Early Pioneers

From the very beginning, Protestant missionaries were alert to see in medicine an important agent for evangelization. Yet, their philosophy of medical missions had to

undergo an evolutionary process as well. There was Dr. John Thomas of England, the first medical missionary in the modern sense of the word, who left a significant impression in Bengal in 1793. All are acquainted with the name of Scudder. Dr. John Scudder was the first of the clan and the first American to go into medical missions. He went to Ceylon in 1819. In 1932 there were five medical Scudders in India and one of the most famous is Dr. Ida Scudder, of the Christian Medical College in Vellore, South India. Another first was Dr. Peter Parker, a skilled surgeon, the first medical missionary to China, who founded the first modern hospital in the Far East. It was not until 1869 that the first woman doctor, Dr. Clara Swain, went to India under the Board of Missions of the Methodist Church. It was through her efforts that medical education for Hindu and Moslem women had its impetus. The religious laws and customs of purdah forbade women to be seen by men other than their household. Therefore, women doctors had a unique part to play. This also was realized by Dr. Anna Dengel as we shall see later.

Philosophy of Protestant Medical Missions

After Dr. Clara Swain there was little progress in medical mission work. Dr. Dodd points out that the philosophy of missions in the mid-nineteenth century was:

> The overseas missionary enterprise is strictly a preaching enterprise. Only ministers can do this properly. Doctors are needed to look after the health of these ministers, missionaries, and their families, but nothing more. Such doctors are auxiliaries but not real missionaries.

He goes on to say in tracing this philosophy:

> Today it is easy to take exception to so limited a philosophy. We live in a day when the overseas Christian approach is a manifold, versatile, and comprehensive undertaking. It includes schools and colleges, hospitals, medical schools and schools of nursing, agricultural and rural missions, printing presses and translators, programs of literacy and literature, radio, movie, and drama. The concept back of this multiform approach is the "wholeness of man," which Phyllis Garlick of England describes: 'We try to minister to man's physical, intellectual and social needs—and always with the spiritual as the apex of this broad pyramid. Medical work, undertaken in this spirit, is just as truly a part of the great commission which came from the Great Physician himself, as preaching. He said, "Go heal."'
>
> ...It is interesting to trace the change in this philosophy. In the nineteenth century, Dr. H. M. Scudder, son of Dr. John Scudder, wrote to his board, outlining his ideas about medical work for the people of India. His letter seems to have made an impression. It made these points:
>
> 1. The union of preaching and healing harmonizes with the example of Christ.
> 2. Medical work serves as a happy introduction to Christianity.
> 3. Physical help aids the reception of the spiritual message.
> 4. Medical work attracts a daily audience.
> 5. It gives women opportunities to serve.
> 6. It supports the preacher.
> 7. The standing of the physician brings people to his house.
> 8. It is a peculiar opportunity for manifesting Christian love.

In spite of the changing philosophy, there was still a slowness on the part of Christian leaders in the West to understand the full concept of medical missions. A parallel situation will be found when we explore Catholic medical missions. Dr. Dodd goes on to say about the changing and evolving place of medicine and missions in the overall mission work of Protestants, as was reflected in the proceedings of three successive world missionary meetings of this century:

> At the meeting in Edinburgh in 1910, medical missions did not appear on the program, and nothing of note seems to have been said about this part of the work. At the next such gathering, the International Missionary Council meeting in 1928 in Jerusalem, there was again nothing about medical missions on the program. But there was an effective protest by the medical group present. Some of them approached the chairman, Dr. John R. Mott, and requested that a place still be made on the program for medical work. This was arranged, and medical

FIG. 1. Mother Anna Dengel, M.D., Foundress and present Superior General of the Medical Mission Sisters.

work came in, as it were, by the side door. At the next International Missionary Council meeting ten years later in Madras, medical work was duly represented on the program along with other major concerns.

Summary and Statistics

Thus, in summary, we see that the Protestant missionaries have long recognized the value of medical missions in evangelization and have utilized them as such. With the funds at their disposal, they have built, staffed and equipped hospitals, dispensaries, and centers; they have developed educational facilities such as schools of nursing and midwifery and medical schools; they have progressed from curative medicine to preventive medicine, and all of this was done according to professional standards. With the growth of government service and the rise of nationalism, they have been quick to see the need of bringing their own services to higher professional status. Finally, a few statistics to complete our short analysis of the fine work of Protestant medical missions:

As to the numerical growth of mission medical institutions, two more statistics are worth noting. The first of these is from the *Encyclopedia of Missions*, 1904. It gives the figure for mission hospitals around the world as 476. The second tabulation, 44 years later in 1948, by E. J. Bingle of the World Dominion Press, London, gives the figures below. This point in the history of the medical work, which was shortly before the Communists closed off China, probably represents the all-time maximum. It is summarized as follows:

Africa	277
Asia	702
Indonesia and South Pacific areas	118
Latin America	45

Figures for mission hospital and staff in the *Directory of Protestant Medical Missions* (1959):

Number of mission hospitals	700
Number of leprosaria	209
Number of missionary doctors	883
Number of national doctors	1307
Number of missionary nurses	1415
Number of national nurses	5937
Number of schools of nursing	239

It might be expected that, in making so extensive a survey among diverse groups in more than 80 countries, there would have been real difficulty in securing complete and accurate information. However, it is estimated that the responses covered about three quarters of the existing Protestant medical work. (Dr. E. M. Dodd, *The Gift of the Healer*)

Post-Council Era and Catholic Medical Missions

We are in a period of renewal and, through the impact of Vatican Council II, the Catholic Church finds herself the focus of attention. She must re-appraise herself, her aims, her work and her relations to the modern world in the light of Christian essentials today. Because of this it will be necessary to give background material so that we can get a true perspective of Catholic medical missions and the role of Medical Mission Sisters in this context. As we all know, the purpose of missions is to plant and build the Church, a stable and permanent Church, in countries where this has not yet been done. The Catholic Church is dedicated to getting all men to love God and one another. This purpose does not change although methods may change from age to age or country to country. In the light of Vatican II era, let us see what the Council has to say. In the Decree of the Dogmatic Constitution on the Church we read:

By her relationship with Christ, the Church is a kind of sacrament or sign of intimate union with God, and of the unity of all mankind. She is also an instrument for the achievement of such union and unity. For this reason, following in the path laid out by its predecessors, this Council wishes to set forth more precisely to the faithful and to the entire world the nature and encompassing mission of the Church. The conditions of this age lend special urgency to the Church's task of bringing all men to full union with Christ, since mankind today is joined together more closely than ever before by social, technical and cultural bonds.

And in the Decree on the Missionary Activity of the Church we read:

The pilgrim Church is missionary by her very nature. For it is from the mission of the Son and the

mission of the Holy Spirit that she takes her origin, in accordance with the decree of God the Father.... The present historical situation is leading humanity into a new stage. As the salt of the earth and the light of the world, the Church is summoned with special urgency to save and renew every creature. In this way all things can be restored in Christ, and in Him mankind can compose one family and one people.

Commandment of Love

This new condition which makes worldwide evangelization more urgent today is the movement of modern man toward world community and the effective unity of mankind. Thus we see that the root of all mission activity is the mission of the Son—that commandment of love which teaches us that the love we have for God cannot be separated from the love we owe our neighbor. It is this commandment of love that is needed to unify all mankind. It is also this mission of the Son and His commandment of love that subsumes the development of a new and important phase of Catholic medical mission activity, the medical mission apostolate that came into being in our century.

As an exercise of Christian charity, the care of the sick has always been an integral part of the life of the Church. In mission countries this exercise of Christian charity is particularly necessary because the need for it is greater. Its purpose is to relieve suffering in the spirit of Christ; it is not mere philanthropy but an exercise of Christian charity and, as such, it has an end in itself. It is exercised towards all men, simply because they suffer and not because of a desire for their conversion. Conversions are finally the work of God and of God alone. Mother Anna Dengel emphasized this concept in her Directives for the Medical Mission Sisters. She says:

> They (the sisters) must see in the patient the suffering Christ claiming their love and sympathy. Since love expresses itself in sacrifice, the sisters will do whatever is necessary for the patient without counting the cost to themselves. Let them follow the instructions of Pope Pius XI: "Love your sick and care for them with devotion. Look after them intelligently and scientifically. Treat their ailments in the best possible way. Make efforts truly to cure. Proceeding in this natural order, you will inspire the confidence and trust which prepare the mind for higher and supernatural things.... The people must never get the idea that conversion and Baptism are necessary to reward your devoted care, your sincere and unselfish Christian charity and zeal. Use all means at your disposal to make them experience in themselves that your religion is good and truly inspired by self-sacrificing love."

In the early years of the Society's foundation, she said:

> Medical work in the missions is a "method" that can never be dispensed with and sometimes it is the only method. The whole Orient is in a state of change and transition. The emancipation of women is growing daily. Many look for enlightenment and guidance in the matter of making themselves and their families happier and healthier. To help them on the road to health is an act of charity and mercy.

The Catholic Church and the Sick

From the earliest times of the Church, a deep Christian personalism has always distinguished the healing encounter. It took its cue from Christ. You see Him speaking to the Samaritan woman, knowing her as no depth psychologist could ever know her; you see Him turn to the woman with the issue of blood and the man born blind and each is a personal encounter. This healing encounter was kept alive through the ages.

Hospitals among the Early Christians

In the early times the sick-poor were cared for in the homes of the Christian bishops. In their ceremony of consecration, bishops were required to make a special solemn promise to provide for the poor. As time went on, their houses really became hospitals where those who were ill and homeless were welcomed. Soon afterward orders of deacons and deaconesses were established for the care of the poor and sick. The deaconesses, whose main work was to visit homes, were the forerunners of our

modern visiting nurses. As soon as persecutions had ceased and the Church had emerged from the catacombs, and as the pagan temples were destroyed by the decree of Constantine (335 A.D.), the movement of founding and building Christian hospitals progressed. St. Helena, mother of Constantine, is said to have played an active part in the promotion of this work. These hospitals were small at first, the wealthier Christians taking care of the sick, but after a few years the movement began to develop rapidly. In 369 A.D., the famous Basilias of Caesarea in Cappadocia was founded by St. Basil; it consisted of a large number of buildings, with houses for physicians and nurses, workshops, and industrial schools. Other large hospitals were built at Alexandria, Ephesus, Constantinople and elsewhere. Eventually these became specialized according to Christian ideals of charity and hospitality as *nosocomia*, for the reception of the sick only; *orphanotrophia*, for orphans; *ptochia*, for the helpless poor; and others for the aged and for pilgrims. At the beginning of the fifth century, hospitals began to spring up also in the Western empire. The first *nosocomium* in the West was founded by Fabiola, about 400 A.D., "to gather in the sick from the streets and to nurse the wretched sufferers, wasted with poverty and disease", as St. Jerome tells us.

Religious Orders and the Care of the Sick

However, during the next few centuries the large hospitals began to decline, and at the same time the religious orders started to grow. It was only logical that the latter should take on this work of charity and give it a more stable foundation. St. Benedict and St. Scholastica gave themselves freely to this task, and Benedictine monasteries became centers where medicine was studied and practiced.

About the time of Charlemagne, there arose several hospital orders and fraternities to care for the sick. A little later, at the time of the Crusades, additional orders sprang up, such as the Alexians, the Antonines, the Beguines, the Hospitallers, the Order of St. John of Jerusalem, and the Teutonic orders. The Teutonic Knights vowed themselves to care for the sick and to build hospitals wherever their order was established. Moreover, at this period, individual women were practicing medicine and nursing the sick, among them St. Clothilde of Burgundy, St. Radegunde of Poitiers, and St. Hildegarde of Bingen. They were truly pioneer medical missionaries.

Popes and Medieval Hospitals

Mention must be made of the important work of Pope Innocent III, who began the great medieval hospital movement in the twelfth and thirteenth centuries. He himself built a hospital in Rome in 1201. Following his example, nearly every city of Europe built one or more hospitals. Another circumstance which promoted the city hospital movement in the Middle Ages was the rapid increase of leprosy, reaching its peak in the thirteenth century. As it spread far and wide, the advantages of segregating the afflicted in leprosaria became apparent. This segregation was a potent factor in the eventual eradication of the disease. The number of these "lazar-houses" was extraordinary; there were two hundred in England and Scotland and no less than two thousand in France alone. Though no treatment for leprosy existed at the time, the erection of these leprosaria represented a great social and hygienic improvement and was a striking example of the Church's attitude toward the sick, a logical outcome of her great spirit of charity.

Attitude of the Church Toward Study and Practice of Medicine

Throughout these centuries, while Christianity was being established and con-

FIG. 2. The author, Sister M. Regis, with a nurse, attending a patient at Holy Family Hospital in Karachi, West Pakistan.

solidated in the European countries, the Church found in medicine a potent means of practicing charity and of leading sick non-Christians to the Faith. However, during the twelfth century several circumstances arose which led to some utterly mistaken notions regarding the Church's attitude toward medicine and surgery. We find these expressed by many non-Catholic and even Catholic historians, who frequently state that the Church's aversion to the shedding of blood checked the development of the medical sciences down to our present time. How much this is contrary to actual fact is clear to those who take the trouble to study the original documents of the period. These give ample testimony that the period from the eleventh to the fourteenth century must be ranked among the greatest in the history of medicine, especially of surgery. One of the outstanding surgeons of his time was Guy de Chauliac (died about 1370), who rightly deserves the double title of Father of Modern Surgery and Founder of the French School of Surgery. His great work, *Chirurgia Magna*, treated the subject with a completeness and precision never before attained and gave its author the rank of a first-class authority during his own and the following centuries. That he was both a cleric and physician-in-ordinary to Popes Clement VI, Innocent VI, and Urban V gives sufficient evidence of the great respect and high admiration he received from the ecclesiastical authorities. It is an indication, too, of how the popes endeavored to advance the development and perfection of surgery and medicine.

Church Regulations and Practice of Medicine by Clerics

It is true that, among the regular and secular clergy who practiced medicine and surgery at this time, some abuses had gradually arisen, leading many to practice the art of healing for materialistic, selfish reasons, which naturally interfered with their service to God. To safeguard her holy cause and to protect her ministers, the Church found herself forced to forbid the practice of medicine and surgery by the regular and secular clergy through several interdicts promulgated between the years

1131 and 1234. It was these interdicts and the regulations for religious sisters that came from the Sacred Congregation from Rome in 1921, reiterating the regulations of 1901, which did not allow religious to perform even secondary work in obstetrics, that were a deterrent to sisters to be able to practice obstetrics or do any surgical work in the missions and thereby hindered the progress of Catholic medical mission work. The task of influencing Rome to change Canon Law with the help of various ecclesiasticals was to be an important contribution of Mother Anna Dengel, and the impact that it had on the history of Catholic medical missions will be unfolded later when we speak of her and the foundation of the Medical Mission Sisters.

The fact that death after an operation was by no means rare in those days of no anesthesia or asepsis was the source of another reason for forbidding clerics to practice surgery, the reason being the risk that the priest or deacon might be charged with manslaughter and thus disqualified from exercising clerical functions. Relaxations of these rigid prohibitions were already being made some sixty years later under Pope Boniface VIII. With permission from their ecclesiastical superiors, clerics could practice medicine in case of necessity and where danger to life was not involved, but they had to practice gratis through motives of love of God toward all, and only where lay physicians were not available.

Surgery in Middle Ages

Even though the greatest geniuses of the Middle Ages dedicated their lives to the development and advancement of surgery, this art was considered by physicians of some countries to be nothing more than a "mode of treatment" too vulgar to be practiced by educated men. Consequently, surgery fell into disrepute, especially in Germany. All this naturally hampered its growth. For this sad mistake the Church is blamed by many modern historians. The actual facts, however, cannot be better obtained than by consulting the outstanding surgeon of the time, Guy de Chauliac, who states that

> surgery became separated from medicine and passed into the hands of mere mechanics either because of laziness on the part of the physicians—for the practice of surgery is by no means an easy task—or because they were too much occupied with the ills they hoped to cure by medicines alone. Due to the insincerity, jealousy, and presumption of a certain class of physicians, the art of surgery was thus in many places relegated to barbers, bath-house keepers, or mere charlatans. The Church had absolutely nothing to do with it.

Incidentally, the dictum, "Surgery is only a mode of treatment", dates back to Galen (131–201), the greatest Roman physician and the founder of experimental physiology. As an anatomist he left many excellent descriptions, but his work was faulty in part. Nevertheless, until the time of Vesalius (1514–1564), that is, for practically fourteen hundred years, Galen was considered the final authority in the fields of anatomy and medicine in general, and was referred to in all arguments.

We can be truly proud of the Church's attitude toward the arts of healing throughout the centuries; any statements accusing the Church of opposition to the development and practice of medicine and surgery are false.

Medical Science in Late Middle Ages and Modern Times

During the late Middle Ages and especially in modern times, many startling discoveries were made in the field of the medical sciences, all of which paved the way for the tremendous progress of medicine in the nineteenth century. Men like Vesalius, William Harvey, Virchow, and John Hunter will be remembered forever as forerunners of the great explorers in nineteenth century medicine.

Although few stories are as fascinating

and stimulating as those dealing with the heroic, lifesaving work of the great discoverers and scientists of the last century, only a few of their achievements can be mentioned here. These have an important bearing on the development of the medical mission apostolate in the twentieth century.

New Discoveries of Medicine

The development of preventive medicine is claimed to be the brightest spot in the medical history of the nineteenth century. Its foundations were laid with Jenner's discovery of vaccination against smallpox in 1796. This science remained incomplete, however, until bacteriology opened unheard-of possibilities for the prevention of disease. The Dutch linen merchant, Antonius van Leeuwenhoek, by improving the microscope lens, enabled Pasteur, Koch and Cohn to overthrow the theory of spontaneous generation and stimulated them to look for the causes of disease along the line of bacterial origin. Thus were demonstrated in rapid succession the organisms causing tuberculosis, Asiatic cholera, leprosy, typhoid fever, diphtheria, tetanus, bubonic plague, anthrax and other diseases. The discovery of diphtheria antitoxin by Behring in 1892 has reduced mortality from diphtheria over fifty percent; similarly, thousands of lives were saved through the use of tetanus antitoxin, antitoxins for use in snake bites, and others.

Discoveries of immense import created an entirely new branch of medicine, namely, preventive medicine. It is now possible for us to protect ourselves against the terrible scourges which in past centuries depopulated Europe much more than wars ever did. In addition there are measures for the prevention of yellow fever, Asiatic plague, tuberculosis, diphtheria, rabies, malaria, leprosy and many other diseases.

Of the greatest importance, too, is the revolutionary progress made during the nineteenth century in the treatment of disease. A scientific study of the action of drugs, initiated by German scientists, [illegible] to the growth of scientific pharmacology. The value of Wilhelm Konrad Roentgen's discovery of the X-ray and Madame Curie's discovery of radium as a help to diagnosis and treatment is known generally.

Surgical Progress

Surgery, too, reached a new climax through the discovery of general anesthesia. Dr. Crawford Long of Jackson County, Georgia, first used ether as an anesthetic in 1842, and William Thomas Green Morton gave the first public demonstration of its use in the Massachusetts General Hospital, October 16, 1846. Not only were these inventions, together with the discovery of antisepsis by Lord Lister in 1867, responsible for a tremendous decrease in post-operative morbidity and mortality, but also they made possible a series of daring operations, utterly unthinkable before. We can truly agree with William Osler that the nineteenth century brought many blessings to those who are victims of disease or accident.

Medical Progress in the Service of the Church

Together with all these marvelous lifesaving discoveries, there occurred in the middle of the last century another great event, the revival of foreign missionary activity by many European religious orders. While the civilized world was rapidly and successfully being freed from the scourges of plague and disease, the peoples of the mission countries of Africa and Asia were still deprived of the benefits of modern medicine. What was more logical than that the Church should want to use these developments of medical science in her charity toward the sick, in the service of those who lived in lands where disease was rampant?

Impetus to the Development of Catholic Medical Missions

But it soon became clear that no one individual could master the two great fields of theology and medicine, and practice both satisfactorily; nor had this been encouraged by the Church in the past. Desiring, however, to utilize the medical achievements of the nineteenth century, the Church in the twentieth century showed a decided change in her attitude toward medical missions. The final result was the founding of a new apostolate, the medical mission apostolate, which consists in the introduction of organized, systematic medical care by missionaries, religious and lay men and women who are professionally trained in the various medical spheres.

Fig. 3. Dr. Agnes McLaren, a Scottish Presbyterian woman interested in Women's Suffrage. At age 40 she decided to study medicine, and at age 60 she became a Catholic. Learning of the high mortality among Indian women, who, because of the "purdah" customs which forbade them to be seen by men outside their families, were unable to be treated by male physicians, she founded the Medical Mission Committee in London, to raise funds to help these women. At age 72 she went to India herself and founded St. Catherine's Hospital. Hoping to continue the work, she advertised for volunteers, and it was in this way that she came in touch with Anna Dengel, a young Austrian girl, who, although Dr. McLaren died in 1913, went on to study medicine herself, and continue the work Dr. McLaren had started.

Missionary bishops and missionary priests and sisters could see the medical needs of their people, but the previously mentioned restrictions and regulations were still in force. Also, lack of financial resources was another deterring factor. Most priests and sisters gave simple remedies, but modern medicine is dangerous when utilized by inexperienced people—as Pope Pius XI was later to say in 1925 at the opening of the Vatican Missionary Exhibition. "We are living in times when unenlightened heroism is not enough". It is noted here that, for the first time, this missionary exhibition had a medical section.

Early Pioneers

The idea of developing medical missions seemed to occur simultaneously to various people without each other's knowledge.

Among the very earliest pioneers were two Scottish converts whom we mentioned earlier. Both of these women, Dr. Agnes McLaren and Dr. Margaret Lamont, were most active in Protestant medical mission work. Dr. Lamont was graduated from the London School of Medicine for Women in 1895. Her work in India, Mesopotamia, Egypt, China and South Africa gave her a unique experience and knowledge of conditions in these countries and of medical needs there. She became a Catholic in 1911. Thereafter she became a great proponent for Catholic medical missions.

In 1904 Dr. Agnes McLaren brought the

issue of medical missions to a focus. She was a real pioneer in medical mission work. She was born in Edinburgh in 1837. She advanced the movement for Woman's Suffrage, and at the age of forty she decided to study medicine and went to the famous Medical School of Montpelier in France. She lived with the Franciscan Hospital Sisters from whom she came first to know of Catholicism. She already had developed a deep spiritual life as a Presbyterian. At the age of sixty she became a Catholic. Her love for medical missions she carried over into her Catholic life. She had always been interested in the women of India and knew of the purdah custom of Muslim women and also of some of the Hindu women, who adopted this custom of seclusion that debarred them from medical aid. Her work for this enterprise will be delineated later when the story of the foundation of the Medical Mission Sisters is traced. Let us pursue the further development of Catholic medical missions for the present.

Lay Organizations—Medical Mission Apostolate

The lay Catholic medical mission movement really began after World War I. The first group was formed in 1918 in Munich by a few medical students. As a result of this, the Medical Mission Institute of Würzburg, Germany, in December 1922 came into being. It was founded by Right Reverend Monsignor Christopher Becker, Professor at the University of Würzburg, who had been repatriated during World War I from Assam, India, where he had been Prefect Apostolic for seven years. The purpose was to train young men and women in the various medical and pharmacological specialities for the missions. This institute is still in existence and has sent many doctors to the missions throughout the world.

Also, in Holland in 1918 a group of university students formed to provide medical aid to the missions.

By degrees, almost every country of Europe began to establish Catholic medical mission centers for recruiting and training doctors for the missions. In Paris the Catholic Institute of Paris gave courses for missionaries, and in 1926 the Pope asked that they give a course of medicine for missionaries. In Belgium also, in 1926, the Medical Foundation to the Belgian Congo of the University of Louvain was founded for recruiting doctors for the Congo and for setting up of medical centers for training indigenous personnel.

In the United States, Dr. P. J. Flagg had founded a group known as Catholic Medical Mission Society in 1912 to promote the cause of medical missions. Later he conferred with Father Moulinier, and with the efforts of Dr. Margaret Lamont a group was brought together to discuss medical missions. The committee that was formed made a survey of the mission field, and as a result the Catholic Medical Mission Board in New York came into being in 1924. Its purpose was to organize means of financing projects for collecting and dispatching medical supplies for the missions. This board is still in existence. Thus, the Catholic medical mission apostolate began.

Role of Medical Mission Sisters

What is the role of the Medical Mission Sisters in this historical setting? In 1925, this Society was a unique organization in the Roman Catholic Church, and we have to examine its history in the light of those times and in the light of Vatican II.

Catholic sisters as qualified doctors and nurses for women and children in mission lands was as much an innovation in 1925 in the recognized activities of sisterhoods as was the teaching of the young, the nursing of the sick, the care of the aged and the poor outside the cloister in the seventeenth century! When viewed in the light of the changes brought about for sisters in this age

of renewal, one sees that the foundress, Mother Anna Dengel, was ahead of her times and was a woman of vision and faith. In the Church, religious orders come into being in response to a contemporary situation. The new outlook and the new response to a contemporary situation in this century that prompted the foundation of these Sisters was the need in Catholic mission activity of organized, systematic medical care by professionally trained religious sisters.

Seed for Growth

The seed for the Society was planted early in this century by Dr. Agnes McLaren of whom we spoke earlier. We saw how this woman was cognizant of the needs in mission lands for medical aid and particularly for women doctors to look after the women of India who lived in seclusion. There were no Catholic women doctors to go out to help these women, and most of the mission work was done by religious women who, because of the Church's restrictions, were forbidden to engage in surgery or obstetrics. Dr. McLaren had learned of these needs from Monsignor Dominic Wagenaar, Prefect Apostolic of what is now known as Rawalpindi, Pakistan. With him she founded a small hospital for women and children and was able to find sisters to staff it but no doctor. To study this problem of women doctors she went out to what was then India, at the age of 72. On consultation with many other bishops who gave her letters stating the necessity of having sisters study medicine, she stopped in Rome to petition Pope Pius X to give this permission. There were other attempts as time went on, but to no avail. She had to find some other solution and looked for Catholic lay women doctors to staff her hospital in Rawalpindi. This also was to no avail, as there were so few women doctors at that time (1911).

Early Years of Foundress

The circumstances that brought Dr. Agnes McLaren and Dr. Anna Dengel into correspondence were truly providential. Actually, they never met. Anna Dengel, a native of the Austrian Tyrol, had gone to visit a friend at quite some distance from her home. This friend, wanting to send a message to her father and having no writing material at hand, wrote on a pamphlet which she happened to have. Anna Dengel read this pamphlet which contained information on a school in Lyons, France that the Franciscan Missionaries of Mary had for training girls for missionary nursing. This appealed to her. She wrote to her friend there, Mlle. Victoire L'Abbey, and asked her to investigate. She was unable to find the address, but she knew of something else in which Anna Dengel might be interested. She was in contact with Dr. Agnes McLaren and knew of her need for a woman doctor or someone to study medicine. Therefore, Anna Dengel began to correspond with Dr. McLaren in 1911. As a result, plans were formulated for Anna to go to medical school at the University College of Cork in Ireland, since a British degree in medicine was desirable and knowledge of English indispensable to work in India. But in the midst of these negotiations Dr. McLaren died in France in 1913. Nevertheless, all these plans were carried on because of the London Committee which Dr. McLaren had organized to aid in medical mission work. It was this committee that financed her studies. Anna Dengel began her studies in medicine in the fall of 1913. After her studies she was to go to the hospital in India that Dr. McLaren had founded. In 1920 she went to Rawalpindi and took charge of St. Catherine's Hospital. In her own words we read:

> The hospital had only fifteen beds, and even these were rarely all filled. But there was a large dispen-

sary, up to 100 patients a day. With the help of a sister, who acted as interpreter, I started work at once. It was quite obvious that the first thing I would have to concentrate on was Hindustani. I took a munshi (teacher) who, I soon discovered, was more fond of discussing comparative religions and Hindu customs and traditions (he was a Brahmin) and of reciting Persian poetry than of drilling vocabulary and verbs. Sometimes a whole hour passed without any allusion to grammar. Perhaps I was more to blame than he, for I found it all very interesting, and, what is more, in due course it helped me greatly to understand the mental attitude and religious and social practices of my patients. As far as the language is concerned, I learned a great deal from a little Mohammedan girl who hovered around me like a guardian angel.

Among the women and children who came to the hospital and dispensary, there were Hindus, Sikhs, native Christians, some Europeans and Anglo-Indians, and many Mohammedans. The latter came shrouded in burkas and accompanied by relatives. In the presence of women they lifted the veil, but the moment a man appeared on the scene the veil dropped swiftly.

Sometimes I was called to patients quite a distance away. On account of my hospital duties I could but rarely indulge in these interesting tours, but occasionally it was possible. I remember one instance of a visit to a Mohammedan woman on the northwest frontier. She was 18 years old, very beautiful and worried because she had not yet given birth to a child. She was perfectly healthy. Why did she not come to the hospital for consultation? The answer was that she, being the wife of a rich landowner, could not leave her enclosure, and this was a mark of exclusiveness and distinction.

After the professional part of my work was completed, I sat for awhile with the hostess and her women servants in the enclosure and chatted on sundry topics. The woman cook was about her business at one end of the compound. As her cough sounded very suspicious to me, I suggested an examination, which revealed tuberculosis in an advanced degree. She was a deadly menace to all the women of the Zenana enclosure. Not long ago the first wife of the landowner had died of tuberculosis, and the fate of her successor can be easily guessed had not the cook been removed.

One summer I established a temporary dispensary in a mountain village on the Kashmir border. What led me there was a chance meeting with an Indian doctor from a rural dispensary who, when he heard I was a doctor, begged me to examine a patient who had developed a high fever after delivery. He offered to find a horse, but to avoid delay we decided to walk. In an hour we reached our destination. I soon discovered that the woman had pneumonia and [illegible] septicemia as was feared. As the relatives told us of the plight of the mountain folk—especially that of the women and children in sickness—I promised to come back. When I did return, accompanied by a nurse, the news spread like wildfire through the school and post office. In a few days we had from 100 to 150 patients a day. Some were carried to us from great distances. The seriously ill of the neighborhood we visited. Work like this, in an isolated rural area, was an eye-opener. It showed that thousands of people have no medical care whatsoever. There was a rural dispensary in charge of a very fine Sikh doctor, and we heard of a herbalist in one of the villages, but what is that for 40,000? The greatest plea was for a trained midwife.

These are but a few of the experiences of Dr. Anna Dengel that prompted her to go to the United States in 1921 to arouse interest in medical missions.

To America—To Make Needs Known

Dr. Anna Dengel knew no one in America. The only address she had was that of the Reverend Michael A. Mathis, C.S.C., founder of the Holy Cross Foreign Mission Seminary, the Bengalese, in Washington, D. C. However, Miss Pauline Willis, who was a member of the London Committee, having been born in Boston, Massachusetts, knew many people and offered to go to America with Dr. Dengel and to introduce her to her many friends there. Dr. Paluel J. Flagg, one of the founders of the Catholic Medical Mission Board, and Father John Considine of Maryknoll were at the pier to meet them. For six weeks Miss Willis remained with Dr. Dengel introducing her and helping in many ways. They met many people and many members of the clergy. Among the most encouraging were Cardinal Hayes of New York and Cardinal Dougherty of Philadelphia, both of whom gave her full permission to speak and to make the needs known within their dioceses.

FIG. 4. St. Catherine Zenana Hospital, Rawalpindi, Pakistan. The first hospital of the Medical Mission Sisters, founded by Dr. Agnes McLaren in 1910, became an orphanage when Holy Family Hospital was built in 1927.

While in New York, Dr. Dengel met the Reverend Michael A. Mathis, C.S.C., who was at that time Superior of the Holy Cross Foreign Mission Seminary. Father Mathis had been one of the organizers of the Catholic Medical Mission Board founded in New York in 1924. He had made a personal investigation of the Catholic medical facilities in India from November 1922 to May 1923. He had also sent four Catholic nurses to the Holy Cross mission in Dacca, Bengal, in October of 1924.

This meeting of Father Mathis and Doctor Dengel was most important since the foundation of the Society of Catholic Medical Missionaries grew out of the discussion of the problems presented by Dr. Dengel's experience on the one hand and by that of Father Mathis on the other. Dr. Dengel's problem was that of securing the proper religious, professional and social necessities for a lay person like herself who wanted to devote her life to medical missions in a hospital conducted by sisters from whose social and religious life she would naturally be excluded. Another grave difficulty was that sisters were not permitted to render any assistance whatever in obstetrical cases, which at times made the work of the doctor very difficult. She realized the necessity of having women dedicated and living under vows so that this religious life in combination with professional life would give stability and continuity to medical work in the missions. Father Mathis' practical problem was to salvage the medical mission unit of four nurses sent to India the preceding fall who eventually were obliged by the conditions of the country to live a kind of community life without being prepared for it. The result of these discussions, which lasted intermittently for several months, was the determination to propose to the Archbishop of Baltimore the founding of a medical mission community of women doctors and nurses which would not only solve the problems under discussion but give continuity to the work.

Provisional Constitution

A provisional constitution for such a society was drawn up by Dr. Dengel. The constitution was very simple. The whole idea was to live for God, for the members to dedicate themselves to the service of the sick for the love of God, and, in order to make charity more effective, to be properly

trained according to the knowledge and standards of the times to practice medicine in its full scope, to which particular apostolate the Sisters were to dedicate their lives.

When permission was received from His Excellency, the Most Reverend Michael J. Curley, Archbishop of Baltimore, to start the Society, Doctor Anna Dengel wrote immediately to Doctor Joanna Lyons of Chicago with whom she had been in correspondence. Dr. Lyons had just finished her internship at St. Thomas Hospital in Gary, Indiana. The two doctors met for the first time in Chicago. Dr. Lyons had been given a trip to Rome as a graduation present and she was just about to depart. While on this trip, she met Archbishop Curley of Baltimore, and since she knew he had approved the foundation of the Society, she discussed the matter with him.

In the meantime Dr. Dengel was living in Washington. Suddenly, one day, without any warning, Dr. Lyons appeared to tell her she wished to join the new Society. It was therefore decided to start the Community on September 8, 1925.

Nucleus of the Society—Medical Mission Sisters

Previously Father Mathis had made an appeal for nurses to go to India. He had chosen four but he had the names of many others who had written. He gave to Dr. Dengel the names of these other nurses so she could get in touch with them. Miss Evelyn Flieger, R.N., (Sister Laetitia) and Miss Agnes Ulbrich, R.N., of Luxemburg, Iowa (Sister Agnes Marie) were the first nurses to respond. Sister M. Laetitia was a graduate of Bellevue Hospital School of Nursing and had heard many Protestant doctors and nurses in Bellevue give talks on India. Thus was formed the nucleus of the Society—four members: two doctors and two nurses.

The Second General Chapter of the growing Society was held in Rome in the year 1932. Dr. Anna Dengel, Dr. Joanna Lyons, Sister Agnes Marie, Sister M. Laetitia, and Dr. Dorothy Finnegan met to dis-

Fig. 5. The first four members of the Medical Mission Sisters: Dr. Joanna Lyons, Dr. Anna Dengel, Sister M. Laetitia, R.N., Sister Agnes Marie, R.N.

cuss the progress and the future of the Society. The Reverend Michael A. Mathis, C.S.C., was also present as the officially appointed delegate of the Archbishop of Baltimore. At this meeting it was decided to add private vows with the hope that the Church would soon permit the sisters to make public vows. Again that year Cardinal Dougherty of Philadelphia had asked the Holy See for the privilege of public vows for the members of the Society.

The slow growth of the Society during the early years was due to the newness of this type of work in the Church and the lack of awareness of the need for it, to the specific aim of the Society, and to its extreme poverty. During these early years Cardinal Dougherty of Philadelphia, who had been one of the first to encourage Dr. Dengel to found the Society, had twice presented memoranda to His Holiness, Pope Pius XI, asking that sisters engaged in medical and obstetrical work in the missions be allowed to make public vows. The first memorandum was presented in 1929, the second one in 1935.

Turning Point in Medical Mission Apostolate

On Feburary 11, 1936, the Sacred Congregation for the Propagation of the Faith issued an instruction to Religious Institutes of Women which not only confirmed the pioneer efforts of the Society for the medical relief of women and children in the missions but also extended the apostolate to other communities. This instruction, which was of far-reaching importance in the matter of maternity and child welfare, expressed the wish for communities to devote themselves principally to health work in the missions. The following is an extract from the document:

> It has always been the practice of this Sacred Congregation to have the methods of the apostolate conform to the varying needs of the time and place. Several missionary ordinaries have brought to the attention of the Holy See the necessity of making more appropriate provisions for the health of mothers and infants. In some regions of Africa, tribes are decreasing day by day and they are destined to disappear if provision is not made for a better assistance for mothers and infants. It is well known that in other lands infant mortality is appalling, owing to the want of hygiene.
>
> The Governments are taking an interest in this problem and non-Catholic sects are giving great attention to it. Some governments demand that nurses obtain a special diploma before permitting them to engage in this work in hospitals.
>
> This Sacred Congregation has studied the question at length, and after obtaining necessary faculties from the Holy Father acting in accord with the Sacred Congregation for Religious, believes it opportune to issue . . . rules and instructions.
>
> This Sacred Congregation would like to see new religious institutes for women founded who will dedicate themselves principally to health work, making due provisions for the necessary safeguards. These institutes must be founded and developed *ad normas juris communis* . . .
>
> These new duties demand a proper technical and spiritual preparation. The sisters should obtain certificates as doctors and nurses. Above all, they should be safeguarded by special spiritual protections which will be determined by the superiors. The religious must see a noble expression of Christian charity in this delicate service, a charitable work destined to ease bodily misery and to open the way for the grace of the Redemption.

This instruction meant that in the missions Catholic women could now combine the religious life with that of medicine, and nursing sisters were permitted to include obstetrics in their ministrations. So we see, as we mentioned earlier, that it was partly through the efforts of Mother Anna Dengel that Canon Law was changed.

On a study trip made around the world in 1936, Reverend Mother Anna Dengel, M.D., called on many mission bishops and wrote to others whom she could not visit personally to ask the favor of information on such points as prevalent diseases in their dioceses and their causes, maternity and child welfare work, and the extent of medical care already provided by government, and Protestant and Catholic missions. The investigations revelaed that there was

a network of medical centers but that in vast areas the meshes were very large so that by far the great majority of people were not within the scope of scientific medical aid. A striking revelation also was that Catholic hospitals, staffed by doctors and trained nurses and even approximately adequately equipped, were few and far between.

The Society of Catholic Medical Missionaries was doing what it could in this field but it was still growing very slowly. By this time, Sister Alma Lalinsky had graduated from Woman's Medical College of Pennsylvania, the first woman religious to study medicine. Also, two Sisters were studying medicine at George Washington University Medical School in Washington, Sister M. Eleonore Lippits and Sister M. Leonie Timmers.

Further Developments

The Third General Chapter of the Society was held in Washington in 1938. The Reverend George Sauvage, C.S.C., presided. Since the house in Washington was again becoming overcrowded, it was decided at this Chapter to move the Motherhouse to Philadelphia, at the invitation of Cardinal Dougherty. It was also decided at this time to open a house in Holland.

On August 8, 1947 the Fourth General Chapter was held in Philadelphia. At the general election presided over by Cardinal Dougherty, Reverend Mother Anna Dengel was re-elected Superior General.

By the year 1948 the work of the sisters had branched out in many different directions. Besides the original hospital in Rawalpindi, the Society had established missions in Patna and Mandar in India; in Karachi (which is now in West-Pakistan); in Atlanta, Georgia; Sante Fe, New Mexico, and on the Gold Coast, West Africa. The hospitals of the Society had cared for nearly 10,000 in-patients during 1948, while 122,783 patients had visited its various dispensaries.

In the words of Archbishop Cushing of Boston:

> The establishment of this Society and its manifest success in the field of the Catholic missions is one of the most indisputable signs in modern times that there is no quarrel between true science and true religion. . . . The sisters have transmitted the spirit of dedication which is inseparable from the ethics of their profession, to a higher dedication. They have absorbed the professional pattern of life in the pattern of religious life and have shown that neither the professional pattern nor the religious life have suffered in the fusion. . . . There is nothing in the essence of a religious dedication to prevent professional development in its finest sense. Rather, religious life, properly organized, brings professional service to its fullest flower.

The Society has been singularly blessed by God in its many friends and the tireless efforts of Auxiliaries over the years who have by personal effort and interest helped to make the needs of the medical missions known. As Mother Anna Dengel, M.D., said in a talk to the Sisters in Philadelphia in 1948:

> God will take care of us if we really try to be good religious. We are still in the early days of the Society. We are now small and new. The requests and opportunities are so numerous. For the sake of the work—the expansion of the Church and charity—we must develop. We can do it only if each one puts all her capabilities into it: of her heart, to pray; of her mind, to think; of her hands, to use all her talents. Our aim is a big apostolate which requires many members and many missions. We all have different shares; but we must blend our talents. God wants our cooperation. His help never fails . . .

Development into Provinces

Another General Chapter was held in 1957 to discuss the affairs of the Society.

The Society was divided into pro-Provinces and Regions. The three pro-Provinces were the American pro-Province, the Holland pro-Province, and the South Indian Malabar pro-Province.

Holland pro-Province

Holland had been made a pro-Province of the Society in 1947. At the moment it

forms 23% of the total membership of the Society.

The first candidates from Holland joined the Society in 1930. They began writing about it and its work in Dutch newspapers and journals. This aroused much interest. In 1935 Father Dr. Drehmanns, C.S.R., previously the private secretary of the Cardinal Prefect of the Propaganda Fide, wrote to Mother Anna Dengel, asking her to make a foundation in Holland as a recruiting center. Two sisters went to Holland in 1937 to investigate and in 1939 one of them was assigned to make the start. War came and cut off communications with the Motherhouse in the United States, but the new foundation flourished remarkably and developed notwithstanding all the effects of the war, bombing included. The first Provincial of this foundation was Sister Eleonore Lippits, M.D. On her first post-war visit to Holland, Dr. Anna Dengel found 56 Medical Mission Sisters there eager and ready for work in the missions. Their first mission was started in 1947 in Indonesia.

South Indian pro-Province

One of the specific aims of the Medical Mission Sisters has been to give indigenous sisters the opportunity to become skilled in all branches of medical and nursing science since they will be eventually responsible for medical work in their own country.

In 1944 two Medical Mission Sisters went to Malabar in South India to help found an indigenous Indian community of sisters dedicated especially to the medical mission apostolate. Mother Anna Dengel helped to write their constitutions in 1946. It was in 1953 that they affiliated with the Medical Mission Sisters in the United States instead of being a local Indian community. Then in 1957 they became a Province. They have three hospitals: Bharanganam, Changanacherry and Mundakayam—all in South India.

Decree of Praise

At the 1957 General Chapter it was decided to transfer the General Administration to Rome. It was clear that with such a transfer and the establishment of Provinces and Regions it would be advantageous to be under Papal jurisdiction. Rome was petitioned for Papal approval. In the words of Mother Anna Dengel we read:

> It necessitated a considerable amount of work to satisfy the requirements. A petition must be addressed to the Holy Father through the Sacred Congregation of Propaganda Fide accompanied by recommendations from the bishops in whose dioceses there are houses of the Congregation; also an account must be submitted of the Society's present condition (members, discipline, property and resources), approved by the bishop of the place where the Motherhouse is located, together with a copy of the Constitutions and any accessory writings.
>
> All these documents are scrutinized by experts and the constitutions are corrected if need be. The recommendations of the Sacred Congregation of Propaganda Fide must meet with approval of the Holy Father. If they do, the Decree of Praise is published.
>
> This grace and favor was bestowed on the Society on June 11th in the 34th year of its existence by Pope John XXIII. The *Decretum Laudis* was received at the Generalate in Rome with deep joy and profound gratitude to God and the Holy Father. No time was lost to communicate the glad tidings to all the houses of the Society enjoining a day of special thanksgiving and rejoicing.
>
> Although the Decree gives immediate pontifical status, it is only a temporary approval usually given for seven years, after which application may be made for final approbation. Dependence of a pontifical congregation of the Holy See is more strict. Every five years the Superior General must send an account of the condition of the whole institute signed by herself and the Councillors and the Bishop of the place where the Motherhouse is located.
>
> The slow and step-like approval of a Community with no precedent such as the Society of Catholic Medical Missionaries shows on the one hand the concern of the Church to safeguard the religious life first and foremost. It also shows her taking into account the changing times with the progressive social and educational development of women and the passing of medicine from a hit and miss

stage to one of scientific practice with a moral code of ethics, making it possible to exercise it with reasonable safety and with dignity.

Last but not least, a major factor no doubt in giving mission sisters permission to study and practice medicine is the unprecedented social awakening of large populations of the world clamoring for a share in what makes life more worthy of human beings. Surely improvements of deplorable health conditions, a longer span of life, and relief in the agonies of pain and misery in their numerous illnesses are their due. The task is enormous and urgent. The more the better qualified representatives of the Church join with those many others already in the field, the more She can express her love and concern for suffering mankind.

In conclusion, it must be justly pointed out that not only the members of the Society but all those—and they are legion—who have been instrumental in building up the Society spiritually, educationally and materially have a share in the Decree of Praise, and may it be hoped also in the trust placed in the Society to go on and forward with confidence and zeal. The Medical Mission Apostolate is teamwork for a better world. The Holy Father has praised it. God wills it.

Renewal and Adaptation

1967 sees the Medical Mission Sisters in their forty-second year of existence. It is this year that will convene many Sisters from their mission stations in various parts of the world for another General Chapter. It is a time for renewal and adaptation, for re-evaluation and re-affirmation of original ideals and ideas of the Foundress and of the medical mission apostolate in the light of Vatican II and the modern world. It is a time of unprecedented opportunities and responsibilities.

To understand every man's dignity and sublime destiny, to see in disease an enemy to man's well-being, to look to those regions where men are most burdened by it, to care enough to work at a remedy, to care enough to consecrate the whole of one's life to God in service to the sick—this is to move in the direction of a vocation to the Medical Mission Sisters. Animated by the spirit of Christ, these Sisters care for all peoples, no class, creed or race excepted, no disease or condition excluded. Educated as doctors and nurses, pharmacists and technicians, administrators and accountants, they build and staff their own hospitals and training centers for nurses, midwives and technicians, bringing the benefits of modern medicine as a tangible expression of Christ's concern for all men. (*Medical Missionary.*)

Medical Mission Sisters and Healing Ministry

For the Medical Mission Sisters, from the time of their foundation in 1925 up to the present, the medical mission apostolate has meant an apostolate of service emanating from the very heart of the Church, continuing to make manifest, for all men to see, Christ's concern for the whole man, body and soul. The key word here is *whole*. It is the whole man, the whole family, the whole city, the whole country, the whole world that is the concern of the Medical Mission Sisters. The motivating force of this concern for the whole man is love, which Mother Anna Dengel so well exemplifies. Long before Vatican II, in one of her many talks to her Sisters, she spoke of the qualities of love needed for the medical mission apostolate. She said:

> If you have real love
> you are inventive
> If you love
> you try to find out,
> you are interested
> If you really love
> you are patient
> you are long-suffering
> Certainly if you love
> you accommodate yourself
>
> If you love
> you want to give
> you are tireless, selfless
> and generous
> If you love
> you really try to serve
> and not just work.
> One does not spare oneself
> if one loves.

From the early years of their foundation they have built, equipped and staffed their own hospitals and followed this pattern in the countries they are now in, such as India, Pakistan, Africa, Vietnam, Indo-

nesia, South America. Often the hospitals began as small dispensaries and evolved into well-equipped and -staffed modern institutions with facilities for the practice of medicine according to twentieth century scientific advances. Such hospitals serve not only the immediate medical and curative needs of the region but also provide centers of training for the indigenous people.

One can better understand the key position such hospital centers hold in the over-all curative and preventive medical endeavor by considering the influence exerted through the formal training given to the eager young people of the country, be they interns, residents, student-nurses, student-midwives, laboratory and X-ray technicians, or compounders; through the day-in, day-out informal education of the patients and their relatives, friends and visitors, as well as the employees of the hospital; as research centers to study diseases and conditions peculiar to the area; as centers of preventive medicine to raise the existing health level; by caring for the health needs of other missionaries, both Protestant and Catholic; by serving the personnel of existing embassies from all parts of the world. So often a member of the diplomatic corps on being transferred from one country to another is advised not to worry about his health as he will find a Holy Family Hospital of the Medical Mission Sisters to meet his needs and the needs of his wife and children.

Summary of Personnel and Areas Served

Statistics for the Society as of January 1967

Professed Sisters	738	
Novices	86	
Foundations	49, of which 36 are hospitals and medical institutes.	
Medical doctors in the Society	53, of which 8 are graduates of Woman's Medical College o Pennsylvania	
Medical students	11	
Mission countries served	13	India Pakistan Vietnam Ghana Uganda Venezuela Indonesia South Africa Malawi Congo Philippines Kenya Jordan

A total of over 650,000 patients were cared for last year by the Medical Mission Sisters in their hospitals.

American pro-Province

Asia

In Qui Nhon, *South Vietnam,* the Sisters have operated a hospital for the past five years. Nearly 30,000 Vietnamese men, women, and children received care there. An influx of refugees—23,000 are camped in Qui Nhon—has added urgency to the hospital's need to expand. This year the Sisters plan to start a nurses' training school, one of the first in the country. Sister M. Brendan Burke of Fort Lauderdale, Florida, a graduate of the Georgetown University School of Nursing, will have the challenging post of directress.

In *India,* a country of 458,000,000 people, there are only 45,000 nurses—one for every 10,000 people. The Medical Mission Sisters consider their nurses' training schools one of their most important contributions to India's health needs. Holy Family Hospital in Patna, on the banks of the Ganges, has been a center for the education of nurses for nearly thirty years. Very much in demand because of the high standards of the school, these nurses have spread out to government and private hospitals throughout India. Last year the school numbered 90 students. Medical Mis-

FIG. 6. Holy Family Hospital, New Delhi, India, has 110 beds.

sion Sisters' hospitals in India also have training programs for midwives, laboratory and X-ray technicians and nurse-aides. The summary report from India notes an increase of 20,000 patients over the previous year. Being mainly dependent on local products, the hospitals have felt the effects of India's recent famine. Sister M. Frederic Niedfield, M.D., of Brooklyn, N. Y. returned recently to one of the poorest areas in the State of Bihar, after a year's work in the United States to complete the requirements of the American Board of Surgery. Since she foresaw the difficulty of getting i.v. glucose for her patients because of the sugar shortage, she took with her as much as would fit into her suitcase. "It's only enough for four or five operations," she said, "but it might save a life." In her position as medical director of the 160-bed Holy Family Hospital in the village of Mandar, she will be responsible for some 15,000 patients in the coming year. In a recent letter Sister Frederic describes a trip to the hospital's public health dispensary: "We passed through terribly dry fields, with women breaking up clods of clay with mallets. In one field there were clay pots turned outside down in petition for rain! We are hard put with drought and famine in this area."

In Dacca, *East Pakistan*, the Sisters' 140-bed hospital had weathered the worst cyclone the residents had ever witnessed. Local reports said that 90% of the small homes in the city were destroyed and thousands of lives were lost. "We had to do an emergency Caesarean section, using kerosene lamps and flashlights. Thank God the baby arrived safely, completely unconcerned with the storm raging around him. We anticipate a series of epidemics in the wake of this tragedy."

A half-day's trip north of Dacca, the Sisters' village hospital in Mymensingh saw its number of out-patients grow from 24,000 in 1964 to 36,000 in 1965, a 33% increase. This hospital's special problem is the shortage of nurses. Although the medical needs of the villages are vast, the cities attract the greater percentage of the qualified nurses. The Sisters emphasize public health and village work in the nursing school of their Dacca hospital, encouraging their students to gear their services where the need is greatest.

Crossing to *West Pakistan*, one finds the seaport city of Karachi, with its eight-storey

buildings and limousines contrasting sharply with its mud-walled hovels and camel carts. Here the Medical Mission Sisters have added a new section to their Holy Family Hospital, the second part of a three-part building program. Sister M. Regis Polcino, M.D., is the medical director. The total number of patients admitted shows a corresponding 33% increase over the previous report, with nearly 6200 patients. This year part three of the building program is underway, a building that will house the nursing school.

Africa

A visitor to the Medical Mission Sisters' 100-bed hospital in Fort Portal, *Uganda,* East Africa, would be struck by the potential for development of the area. Fort Portal is near Queen Elizabeth National Park in "safari" country, where a traffic sign warns, "Elephants have the right of way". Within an 80-mile radius of the hospital are some 200,000 people who have no medical facilities. Four days a week, part of the hospital staff goes on a medical safari to different centers in this area. The arrival of their Landrover is announced over the hills by drums. Sister M. Gregory Gates, M.D., of Hamburg, N. Y., reports that she is often forced to examine two to three hundred patients on one of these safaris. The Landrover has room to bring four of the most serious patients back to the hospital, and the Sisters say that often the choice is a hard one to make. The annual report shows a total of 224 major operations, as compared to 149 in the previous year. The recent earthquakes in Uganda damaged sections of the hospital to the extent that they will need complete rebuilding, but no one was injured.

In *Ghana,* West Africa, the Medical Mission Sisters have two hospitals and staff a government-owned leprosarium. The hospital in Berekum has expanded its bed capacity from 100 to 125 during the year and has cared for 61,000 patients, about 11,000 more than last year. This year the Ghanaian government has asked the Sisters to be responsible for the training of all the midwives for the entire Brong-Ahafo region, one of the eight divisions of Ghana with over half a million people. The Sisters have also been requested to expand their activities to include more supervision of the regional health centers set up by the government.

An estimated 10,000 people in the Brong-Ahafo district are afflicted with leprosy. In conjunction with Ghana's leprosy control program, Sister M. Francis Webster, M.D., who has had special training in leprology, goes on "trek" to find and treat the victims in their villages. The leprosarium in Kokofu provides medical, recreational and occupational facilities for its in-patients, who numbered 126 last year, while another 3,000 are on their active out-patient files. About 800 patients have been discharged symptom-free after the long course of leprosy treatment in the ten years of the Sisters' service in Kokofu.

South America

In Venezuela the Medical Mission Sisters are responsible for the administration and staffing of three hospitals. One is in the city of Maracaibo, another on a jungle river and the third on a sea-bound peninsula. Together they cared for approximately 100,000 patients during the year.

Venezuela's need for nurses has prompted its government to start a school of nursing at the University of Zulia in Maracaibo. The Medical Mission Sisters have been asked to direct the school, which started February 1, 1966. Sister M. Juanita Ortega of Santa Fe, New Mexico, is the directress of the school and acts as its coordinator with the faculty of the University's medical school. Sister M. Gabriel Jollett of Madison, N. J., is one of the instructors. The University nursing school is the first in the country. Both

the University officials and the Sisters hope that making nursing a University-level profession in Venezuela will attract well-qualified girls who now think of it as a low-status position.

Holland pro-Province

Asia

In Makassar, *Indonesia*, the Dutch Medical Mission Sisters were asked to be responsible for the government midwifery school and clinic. Since 1947 the Sisters have done excellent work and have made themselves no longer required because the work can now be done by Indonesian hands, giving the Sisters the opportunity to meet the serious medical needs outside the town of Makassar.

The general hospital in Pare-Pare has developed well. It responds to a real need in the town of 70,000 inhabitants and the surrounding area of 300,000.

In addition to the above two places in Sulawesi, a maternity clinic was started in Solo (Java), which was expanded with a pediatric department and will gradually develop into a general hospital and have a training school for nurses.

The 188 hospital beds of the Medical Mission Sisters in Indonesia admitted 11,807 patients during the past year and had 5,540 deliveries. There is a real hope that more qualified Indonesian girls will be willing and able to work and live with and enlarge the present group of eight Indonesian Medical Mission Sisters.

After a promising start in 1959, the first part of the Okkalapa hospital in Rangoon, *Burma*, had been built and plans for the construction of a large hospital had reached an advanced stage. In the years 1964 and 1965, however, the skies clouded over Burma and the Sisters saw their hospital nationalized and were forced to leave their beloved Burma.

Africa

In Welkom, *South Africa*, the heart of the gold-mining area, the Sisters are responsible for the administration and staffing of a giant 900-bed industrial hospital, the Ernest Oppenheimer Hospital. In this definitely valuable work—as Mother Dengel expressed it, "for the poorest of the poor"—they are assisted by graduate orderlies trained at the hospital. The last annual report shows 22,907 patients admitted.

In the *Congo*, during and since the independence war, the rural health center in Pendjua has grown beyond its former status and become a general hospital with a training school. Sister M. Thoma van der Zee, M.D., was for a long time the only doctor there, in one of the most isolated areas of tropical Africa.

Today the Sisters are also in charge of the government district hospital in Kiri, and soon they will serve under Congolese authorities and in cooperation with Congolese doctors to improve the central hospital of Inongo and to set up a training school for the whole area.

It was decided in 1957 to establish a mission in Malawi (then Nyasaland). After a most difficult start, the rural hospital of Phalombe got into full swing within a few years and a training school for assistant nurses and midwives was opened. This work among a poor population, in a young emergent nation, met the expectations of the Church, the people of Malawi, and the Sisters, and further expansion in that country is being studied.

South Indian pro-Province

In 1944 four South Indian girls who had completed their nurse's training at Holy Family Hospital, Rawalpindi, received the religious habit at Kottayam. Today the Malabar pro-Province numbers 115 professed Sisters.

Their first medical establishment was a

hospital in *Bharananganam*, opened in 1948 with only 12 beds. This hospital grew rapidly and now includes 130 beds, a training school for 15 student nurses, a school of midwifery for 11 student midwives. Public health work is especially stressed. In 1966, the deliveries numbered 1322. At present a new surgical ward is under construction.

In 1955 the Archdiocese of *Changanacherry* presented to the Sisters a well-planned out-patient clinic with adequate provision for 21 in-patients, a modest home for a resident doctor, and comfortable quarters for the staff. In twelve years Changanacherry Hospital has grown to 150 beds. Recently a nurse's training school was begun with ten students.

The latest venture of the Malabar Province is the Medical Trust Hospital in *Mundakayam*, which opened in 1965. This hospital is located high in the hills and serves workers of tea and rubber plantations. Land and buildings were handed over to the Medical Mission Sisters by the Medical Trust. While the Sisters are staffing the hospital and equipping it with the help of Misereor of Germany, the Medical Trust is pushing for the completion of what will be a 175-bed hospital.

In addition to the areas served by the three pro-Provinces of the United States, Holland, and South India, the Medical Mission Sisters have training centers and hospitals in the Philippines, England, Germany, and Jordan.

Spirit of the Foundress

1965 marked a chapter in the story of the Medical Mission Sisters—forty years of service to the mission of the Church among people of all races and creeds, forty years of skilled medical care to the sick and needy of the world, forty years as religious women dedicating their lives to God and the family of man.

So we see that the spirit of the Foundress of these Medical Mission Sisters was one of deep concern for the needs of the whole human family. She never excluded anybody from her thinking. Every people of every nation was a matter of the same concern for her.

In this age when all are tending towards community, it is the same spirit of Mother Anna Dengel that will burgeon forth in many new forms—a spirit of charity which embraces the developing embryo as much as it encompasses great old age. It is a charity that seeks collaboration and cooperation within and without the Society in all spheres of the medical mission apostolate.

Dr. Harold Brewster, Medical Secretary of the Methodist Board of World Missions, says the following, which could apply just as well to our Catholic medical missions:

> I returned from my trip around the world looking into places where our denomination does not have very significant medical work, to see whether such work was needed and would be welcomed by the governments and people of these places. I found that the needs are still beyond our imagination and the government officials are cordially inviting our help. There did not seem to be any difference between the countries on different sides of the political and ideological curtains. It was thrilling to me that these people who are enemies against each other have this trust in the Church. It convinces me that God has entrusted to us this ministry of reconciliation.

In looking over the historical past, we can truly say that a gigantic work has been wrought by the Church, both Catholic and Protestant, and by the Medical Mission Sisters in this ministry of healing. The seed has been sown and will continue to bear fruit for it has been well planted and it has taken root. It is for us to press onward in great faith and prayer, in compassion and dedication, so that the best of the historical past will continue to grow into a greater future.

References

Personal Interview

Reverend Mother Anna Dengel, M.D.
Sister M. Eleanore Lippits, M.D.

SISTER M. MONICA NEUHAUS, S.C.M.M.
Addresses of Rev. Mother Anna Dengel to Sisters of the Society of Catholic Medical Missionaries (Medical Mission Sisters).
September 4, 1952.
January 1, 1953.
October 23, 1955.
December 3, 1956.
May 7, 1958.

Letters and Unpublished Papers

MOTHER ANNA DENGEL, M.D.
MARGARET LAMONT, M.D.
MONSIGNOR DOMINIC WAGENAAR
ANNA DENGEL, M.D., to Miss Pauline Willis, February 27, 1941.
CARDINAL DOUGHERTY to Anna Dengel, M.D., May 11, 1943.

Annual Reports—Medical Mission Sisters

1964
1965
1966

Pamphlets

ANREASON, ANTHONY T.: *Christian Medical Practice in Africa*. London, Samuel Walker, Publ., 1959.
CHARLES, REV. PIERRE, S.J.: *Medical Missions*. New York, America Press. Vol. 6, No. 5, 1949.
LAMONT, MARGARET, M.D.: *Catholic Medical Missions and Women Doctors*. India, Catholic Truth Society, 1949.
MATHIS, REV. MICHAEL A., C.S.C.: *Blazing a New Trail*. Philadelphia, Dolphin Press; *Medical Mission Sisters*. London, Catholic Truth Society, 1949.
MORRIS, JOAN, M.A.: *Fight for the Right*. (Life of Agnes McLaren, M.D.).
Tubingen Consultation 1964: *The Healing Church*. Geneva, World Council of Churches, 1965.

Magazine Articles

CREUSEN, REV. J., S.J.: An Epoch-Making Instruction. The Medical Mission News, September 1936, p. 305.
DENGEL, ANNA, M.D.: Thirty Years of the Holy Experiment. *Medical Missionary*, September 1955.
GOODALL, REV. FRANCIS P., C.S.C.: The First Medical Mission Congregation. The Ecclesiastical Review, June 1942.
HABIG, MARION A., O.F.M.: Who Was First. World Mission, Vol. 5, No. 1, 1954.
KEELER, FLOYD: Medical Missions Today. Light, September 1940.
LEIZ, TOMY, S.V.D.: Christian Medical Service in India. Poona Athenaeum Studies, No. 1, Vol. 2 1965, p. 1-86.
MATHIS, REV. MICHAEL A., C.S.C.: The Medical Mission Vocation. The Ecclesiastical Review, June 1934, p. 7.
MEDICAL MISSION SISTERS: Medical Missionary. Philadelphia, Pa., 1927, 1928, 1937, 1938, 1939, 1955, 1961, 1965, 1967.
MEDICAL MISSION SISTERS: World Survey. The International Review of Missions, Vol. LV, No. 221, January 1967.
ONION, CHARLES: Mother Dengel's Little Army. Catholic Digest, February 1961.

Books

BECK, SISTER M. BONAVENTURE, S.C.M.M.: *The Society of Catholic Medical Missionaries, Origin and Development*. Washington, D. C., 1955.
BURTON, KATHERINE: *According to the Pattern*. New York, Longmans, Green & Company, 1946.
CAMPBELL, ROBERT E., M.M. (ED.): *The Church in Mission*. New York, Maryknoll Publications, 1965.
CORMIER, PERE, O.P.: *Miss Agnes McLaren, M.D.* Paris, Librairier Poussielgue (Translated by Sister M. Ann, S.C.M.M., 1930).
DENGEL, ANNA, M.D., S.C.M.M.: *Mission for Samaritans*. Milwaukee, Bruce Publishing Company, 1945.
DE WILMARS, MERTENS, DR. CH.: *Transactions of the Catholic World Health Conference*. Brussels.
DODD, EDWARD M., M.D.: *The Gift of the Healer*. New York, Friendship Press, 1964.
HUME, RUTH FOX. *Great Women of Medicine*. New York, Random House, 1964.
KERBY, WILLIAM J. MONSIGNOR: *The Social Mission of Charity*. Washington, D. C., The Catholic University of America Press, 1944.
LOVEJOY, ESTHER POHL, M.D.: *Women Doctors of the World*. New York, Macmillan Company, 1957.
QUOIST, MICHEL, *The Christian Response*. Dublin and Melbourne, Gill and Son, 1965.
SINGER, CHARLES & UNDERWOOD, E. ASHWORTH: *A Short History of Medicine*. New York and Oxford, Oxford University Press, 1962.
WALSH, BISHOP JAMES E., M.M., D.D.: *Blueprint of the Missionary Vocation, World Horizon Reports*, Report No. 19, New York, Maryknoll Publ.
WILLIS, PAULINE: *An Anglo-American Memoir*. Winchcombe, Taylor Young Printers, 1953.

Social Goals in Public Health[1]

By WILLIAM H. STEWART, M.D.[2]

I AM pleased to be with you and proud to add my name to the list of Anders Lecturers—a list that stretches back across four decades and includes many distinguished names in medicine and public health. Dr. Anders himself was one of those physicians whose commitment to medicine extended far beyond his immediate circle of practice and acquaintance. It is most appropriate that his work receive living commemoration through the interchange of ideas that—like his interests—range outside the daily tasks we all perform.

Few words have greater currency in Washington—and I think elsewhere around the country—than the word "goals". Everybody is talking about them. Every agency has its growing squad of goal-tenders. And it sometimes seems to me that everyone uses the word to mean something different. Some "goals" are sharply limited and neatly quantitated targets. Others are so universal and all-embracing that they tend to become meaningless.

Yet despite all this conversation and confusion, I believe it is important that we think about goals—about where we are going and what our real purposes are. We do so at our own risk, of course. If we do think about them seriously, and then measure what we are doing against them, we may find surprising and disturbing things. We may find that much of our blood, sweat and tears is being poured into trivia and irrelevancies. We may even find that some of our means defeat our ends. Then, of course, we face the moment of truth—fix it or forget it.

With this preamble, let me invite you to examine the social goals of public health. In doing so, I shall not be talking about "public health" in its traditional, limited sense. I shall be talking about the health of the public—the health of the nearly 200 million human individuals who live in the United States.

In other words, I shall be saying that your goals and mine are the same. Our functions may differ but our purposes are indivisible. We are jointly dedicated to advancing the health of the American people.

As partners in this health enterprise, we derive our fundamental purpose from the society we live in and seek to serve. And this society, unlike almost all others in history and most others in the contemporary world, is committed to the fulfillment of the individual.

Here in Philadelphia nearly two centuries ago we proclaimed to the world that the rights to life, liberty and the pursuit of happiness were self-evident. Everything we do—in health, in education, in industry—is relevant to this social purpose.

We who work in health are working at the very heart of this social purpose. For health, in body and mind, is among the basic conditions of individual fulfillment. Disease not only limits a man in the exercise of his powers. It strikes a blow at his sense of integrity, of dignity, of being.

This is not to say, of course, that individual men cannot rise above disease and attain fulfillment. What music might Beethoven have composed had he not become deaf? What poetry might Milton have written had he not been blind? Perhaps greater, perhaps lesser than that which they achieved by riding over their handicaps.

But for most of us, freedom from dis-

[1] James M. Anders Lecture XLVI, The College of Physicians of Philadelphia, 1 March 1967.

[2] Surgeon General, Public Health Service, U.S. Department of Health, Education and Welfare, Washington, D.C.

ease and disability is a positive freedom. It liberates us from constraints of pain and weakness. It permits us the use of our powers and capacities toward purposes of our own choosing. We are physically free to move as we choose, mentally and emotionally free to accept or reject ideas as we choose. We need not stop what we are doing to cough, or to lie down, or to cry.

This absence of disease or handicap is one face of health. It is, if you will, the negative face. It is the face of health to which we in medicine have given virtually all our time and attention. We have tried through preventive medicine to keep diseases from happening. We have tried through curative medicine to make people well once disease has struck. We have tried through rehabilitative medicine to restore as much capability as possible to those who remain unwell.

The whole story of medicine has been a story of keeping life going and reducing its pain. In recent years, after centuries of courageous semi-futility, it has been a remarkable success story. The years allotted to the individual for his fulfillment have leaped upward. Many diseases which hampered his fulfillment have all but disappeared. Many handicaps once irreversible are now reversed.

And as a result we can now, for the first time, begin to glimpse the other face of health—the positive face. For in terms of individual fulfillment, health should mean not merely the absence of constraint but the presence of aspiration and growth. The healthy person is not simply un-sick. He is growing in his powers, conscious of them, eager to develop and use them.

Does medicine have anything to do with this individual? I suggest it has. I suggest we are not consigned forever to the defensive team, warding off the enemies of fulfillment. We can never relinquish this function, but we can add to it.

Once we accept individual fulfillment as our ultimate goal toward which health and medicine are working in concert with other disciplines, new worlds open up for us. We shall need to know much more about normal human growth and development in body systems, in mental and emotional systems, in various social and physical environments. Research is already generating such knowledge but most of it—at least until very recently—has been oriented toward comparisons between the normal and the pathological. We need to study the healthy human being for his own sake. We need to study the normal in relation to the supra-normal.

Moreover, once we accept this social goal, we shall need to explore its implications in all phases of our activity. It is obvious, for example, that full concern for the human individual will affect our professional attitudes and practices at the two extremes of life.

Everything we know indicates that the child who is wanted and planned for has a long headstart on satisfactory emotional development, as compared with the child who is not. In this context it becomes imperative that we make available the information which enables parents to choose the spacing of their children. It becomes imperative that we make an all-out effort to prevent or correct the defects of infancy and childhood that leave life-long impediments to development. We are involved in helping to create opportunity for fulfillment.

Similarly we need to reconsider our treatment of the very old. Is the mere prolongation of life, in a kind of twilight existence, the real object of our labors? Do we not have responsibilities for assuring that human dignity survives until death, that dying itself is dignified?

By putting the human being first, we sharply clarify the issues involved in clinical research. If the individual is our prime concern, using him as a laboratory animal without his full and thoroughly informed consent is unthinkable. Experimenting

upon him for no therapeutic purpose, unless he is wholeheartedly—I would even say enthusiastically—in agreement, becomes, in Dr. Irving Cooper's phrase, "medicine of the absurd". To do so is to turn our philosophy and practice inside out. The means defeat the purpose.

A convincing scientific case can often be made that such research leads to the greater good of humanity. This is a highly desirable objective. But to sacrifice the individual person for that objective is not the way to get there in a democratic society. The word "totalitarian" means greater concern for the totality than for the individual member. We have systematically and strenuously rejected that concept in the abstract. We need to be sure that we do not tacitly accept it in our actions.

Further, if the dignity and fulfillment of the individual is our highest goal, we need to take a skeptical look at the general procedures of our profession. Do we run our offices, our outpatient clinics, our hospital wards with any regard to the sense of personal integrity of the individual? Or do we unknowingly sacrifice the individual on the altar of institutional efficiency?

Consider the working man who finally decides, after long delay, that he must seek medical attention. He arranges to take time off from his job. He rides a bus for an hour and sits for two hours more on a wooden bench in an outpatient clinic. When his number finally comes up he receives brief, probably competent but almost certainly impersonal attention and is sent on his way. He may be given a prescription. He may be referred. In any case he is quickly forgotten, and he knows it.

What I have described, with variations, is a widely prevalent condition. For increasing numbers of our people, it represents the face of health care in the United States. It has its counterpart in the hospital ward experience. It even has its counterpart in the office of the top-flight specialist who—although outward appearances may be somewhat more graceful—neither feels nor demonstrates any more real concern for the patient as a person.

Is this the face that should be presented by the most humane of the sciences, the most scientific of the humanitarian arts?

We know that sickness itself strikes a blow at the heart of the individual's sense of integrity and worth. Must we—in the most literal sense—add insult to injury?

We know also why this condition has come about. Reduced to its simplest terms, it is the result of two powerful trends of the past few decades: the explosive growth of medical knowledge and the equally explosive growth in the numbers of individuals to be served. Knowledge has outgrown the reach of his horse and buggy.

In this modern context what is the real nature of the physician-patient relationship? What should it be? Sometimes, as I have suggested, it is almost no relationship at all beyond that of a super-technician looking at a defective part on an assembly line. Often, when it goes beyond that stage, it is a kind of father-child relationship, or that of a commanding officer to a soldier.

Occasionally, but all too rarely, the physician-patient relationship is man-to-man. This, it seems to me, is a desirable goal toward which we might aspire. Today, the patient typically comes before the physician in a dependent state of mind, saying, in effect, "Doctor, help me." Can we visualize the day when the patient will come to us saying, "Doctor, I have a problem. Can you help me solve it for myself?" This sets up a situation in which the individual is personally involved in his own care as a fullfledged participant.

The central dilemma of modern medicine is to respect each individual human being while providing millions of them with complex scientific services. We are being asked by society to serve the total

health needs, not of some of the people some of the time but of all of the people all the time. We are being asked to serve them with the very best that highly complex and compartmentalized biomedical science can provide. And at the same time we are aspiring to do it in a way that protects the dignity and fosters the self-fulfillment of each individual.

How do you achieve the compassionate mass-production and universal delivery of excellence?

The answer is that you don't—not today or next year, at any rate. Not with the resources we now have, or are likely to have.

But, having acknowledged that your reach exceeds your grasp, you work hard to achieve what you can in the direction of your goal.

As a starter, I suggest that we, as physicians, worry less about the relationship between patient and physician and think more about the relationship between the individual human being and the total health enterprise. What are the human needs of people that are related to health, and how can they best be satisfied? What talents and skills are required to meet those various needs? How can we, from our position of leadership in the health force, help to bring the right people together with the right services?

In conclusion, let me propose four social goals for health. They are derivative of the basic social purpose of our society. They are not for immediate achievement but for constant awareness and aspiration.

First, every person should have maximum protection against diseases which need not happen and against illness and injury resulting from the hazards of the modern environment.

Second, every person should have ready access to basic medical care, despite social, economic, geographic or other barriers, and should have the assurance of continuity of quality service through diagnosis, treatment and rehabilitation.

Third, over and above these measures of prevention and cure, every person should have maximum opportunity for developing his capabilities, in an environment that is not merely safe but conducive to productive living.

Fourth, all activities conducted in pursuit of health should be carried out with full attention to the dignity and integrity of the individual.

These are broad, generalized goals. They are in need of further formulation and refinement. They also need to be translated into objectives toward which progress can be measured. These tasks can only be accomplished in a forum which combines the physician's professional knowledge with the perceptions and judgments of those who are tuned to society's values and aspirations.

Where does such a forum exist? It seems to me that you, in this College of Physicians of Philadelphia, have an opportunity to furnish such an arena. You could sit down with economists, historians and others who might bring to the discussion of health the changing patterns of public hopes and purposes. By doing so you would not only widen your own horizons. You would perform a genuine service to the health of the Nation. For all of us deeply need to explore the territory where health fits into the fabric of American culture.

Dr. Cadwalader Evans (1716–1773): Physician and Friend of Benjamin Franklin[1]

By RANDOLPH SHIPLEY KLEIN, A.M.[2]

DR. CADWALADER EVANS, according to his eulogist in 1773, was "an avowed Enemy of all Deceit and Dissimulation, naturally open, generous and benevolent; faithful in discharging the various Duties of Life, and punctual in complying with his engagements, whether they respected the many public spirited Institutions, of which he was a zealous Promoter, or the more general civil and literary Interests of his Country" (1). He had in fact achieved distinction as a Philadelphia physician, was the most ardent promoter of the cultivation of silk in America, a faithful correspondent of Benjamin Franklin, and a peppery member of the American Society.

His father, John Evans, came to America from Wales and became an eminent preacher among Friends in Gwynedd, Philadelphia County. Ellin Ellis, also born in Wales but four years John's senior, was living in Merion when she was married to John. Of their eight children, Cadwalader, the eldest, and Rowland were members of the American Philosophical Society. Little is known of young Cadwalader's life before he came to Philadelphia in 1742 to study medicine. There he was trained by Dr. John Kearsley, physician and amateur architect, who also trained Evans's cousin, Thomas Cadwalader, and others such as William Shippen and the Bonds. Evan's preceptor, an excellent physician, "possessed a morose and unhappy temper, and . . . treated his pupils with rigor, requiring of them services of the most menial kind" (2). Evans is also reported to have been one of Dr. Thomas Bond's first students, perhaps while Bond was senior apprentice to Dr. Kearsley. Evans progressed rapidly, for "the Strong Genius that seem'd to be Impress'd in his Nature . . . very Early Appeared for that Calling, Drew [him] as it were Forcibly to it" (3). After acquiring substantial knowledge, he set off in 1748 for Edinburgh for further study. This was the time of King George's War, which made the seas dangerous for travellers. The voyage, a long and difficult one, ended when Evans's ship fell prey to a Spanish privateer which carried it to Haiti. There Evans contracted a severe fever which procured him a release to Jamaica for treatment. While convalescing in Kingston, he met some Quakers with whom he exchanged reflections on "the Progress of Decay, of Truth, in Different Places" (4). Evans considered setting up practice in Jamaica, but after two or three years, he returned to Philadelphia (5).

Rather than leaving again at once for Edinburgh as he originally planned, Dr. Evans began practice in Philadelphia. Dr. Evans thought that electricity, with which his friend and neighbor Benjamin Franklin was experimenting, might be put to practical uses. A twenty-four-year-old woman, Dr. Evans's sister according to James Thacher's *Medical Biographies,* had been suffering from violent convulsive fits for ten years (6). During her attacks, which were as frequent as forty times a day, three men were required to restrain her; bleeding, blisters, anodine, and "nervous medicines" which previous doctors admin-

[1] Section on Medical History, The College of Physicians of Philadelphia, 7 March 1967.

[2] A graduate student in history at Rutgers University, Mr. Klein lives at 843 Davidson Road, Piscataway, New Jersey 08854.

istered had no lasting effects. The miserable girl was tortured almost to madness and later wrote to Dr. Evans, "I was almost grown desperate, being left without hope of relief . . . as a person reduc'd to the last extremity, is glad to catch at anything; I happen'd to think . . . [electricity] might be useful to me." In September 1752, with Franklin acting as technician, Dr. Evans administered electric shocks to his suffering patient. As the patient later recalled (7):

> I receiv'd four shocks morning and evening; they were what they call 200 strokes of the wheel, which fills an eight gallon bottle, and indeed they were very severe. On receiving the first shock, I felt the fit very strong, but the second eventually carry'd it off; and thus it was every time I went through my operation; yet the symptoms gradually decreased, 'till at length they entirely left me.

This treatment continued for two weeks, after which the woman used "a globe and bottle to electrify myself every day for three months". The fits disappeared and the cramps all but ceased shortly thereafter.

The grateful patient informed Dr. Evans in February 1753 and again a year later, "I now enjoy such a state of health, as I wou'd have given all the world for. . . . I have great hope it will continue." Elated over the results, Dr. Evans communicated them in October 1754 to European physicians who subsequently published them in the *Medical Observations and Inquiries* of 1757. The cure was "perfect and permanent" and the patient lived, mind and body unimpaired, to age seventy-nine.

With success behind him and bright hopes for the future, Dr. Evans again embarked for Europe, this time successfully. He stayed in Edinburgh for a year. Then he traveled to London where he met Dr. John Fothergill who took some notice of him. Returning to the colonies in 1755, he began to practice medicine again, and in 1757 was appointed to the staff of the Pennsylvania Hospital, replacing Dr. Samuel Preston Moore. "In his conduct toward his Patients," said one eulogist, "he was full of Humanity, without the least Affectation of it; and, hating Covetousness, was so disinterested in his Practice, that he appeared to have the Health and Happiness of his Patients only in view" (8). This position and his growing practice enabled him to marry Jane Owen, daughter of Owen Owen of Philadelphia, on the 30th of the Eleventh month 1759. Soon he was regarded as "an eminent, candid, and successful Physician, his Knowledge was deep and liberal, his Principles rational, improved by extensive practice, a diligent Observation, and a penetrating Judgment" (9).

Hence in 1765, when Dr. Bond became the victim of a "tedious indisposition. . . . the whole care of the Hospital" became Dr. Evans's responsibility (10). Dr. Evans was particularly interested in enlarging the Hospital library and some credit him as its originator as well. On May 31, 1763, Dr. Evans, along with Drs. Thomas and Phineas Bond and Thomas Cadwalader, requested that students attending the wards and not apprenticed to one of the attending physicians should pay six pistoles as gratuity for the privilege. After explaining that it was the custom in most British hospitals to present such gratuities to the attending physician, they proposed applying the money toward founding a medical library in the hospital, "which we judge will tend greatly to the advantage of the pupils, and the honor of the institution" (11). When Evans informed his friend Benjamin Franklin of the new library, the latter requested a catalog of the books in the library so that he might solicit additions from his medical acquaintances in England. Dr. Evans sent the catalog along with an explanation that the Hospital lacked funds, therefore must rely upon donations and delay any purchasing (12).

The Franklin-Evans correspondence continued until Dr. Evans's death in 1773.

Although many of their letters concerned "philosophical" questions, such as Dr. Evans's comments on gout which Franklin admitted "May be useful to me who have already had some touches of that Distemper", the letters were also friendly and contained information about family, the Philosophical Society, politics and the like (13). One letter of particular merit concerned the "dry belly ach of the West Indians, and North Americans". After receiving Dr. Baker's essay on the Devonshire colic from Franklin, Dr. Evans remarked that its symptoms were similar to those of the West India gripes which his cousin, Dr. Thomas Cadwalader, had recently described. He postulated their cause might be the same. Dr. Evans underscored the fact that although the French and British islands were in the same climate, the French drank wine and the British drank rum punch; the former hardly knew the dry gripes, yet the latter were plagued with them. The cause seemed to be the "admixture of lead, in the composition of the Still Worm, or the well known properties of inflameable spirits, to relax the bone of the alimentary canal". Dr. Baker's experiment should have been able to determine if Dr. Evans's thoughts were correct. These were, in fact, Franklin's own thoughts, that is, that the lead pipes used in the distilling polluted the rum. He also informed Evans that the second part of Dr. Baker's piece, yet to be published, substantiated such a belief (14).

Besides his private practice and duties at the Pennsylvania Hospital and Almshouse, Dr. Evans had apprentices whom he instructed. One was James Hutchinson who attended Dr. Evans's shop and practice for two and a half years and whom Evans recommended as hospital apothecary. As a member of the medical profession Dr. Evans naturally became involved in the Morgan-Shippen disputes which began in 1765 and plagued medical training in Philadelphia for years. Dr. Evans, a frank and outspoken man, certainly would not condone Dr. John Morgan's refusal to invite the Shippens to join the newly organized medical society. Acquiescence would "imply something defective or atrocious in their characters, w[hi]ch rendered them unfit members of the society and might be a real injury to them" (15).

Obviously Dr. Cadwalader Evans was a man who did not hesitate to express his opinions and then act accordingly. If the squabble over the medical society irritated him, the "revival" of the old American Philosophical Society, and subsequent plans to merge it with the American Society infuriated him. His letters to Benjamin and Governor William Franklin present venomous descriptions of the proceedings, and, although they are certainly not an impartial account, they do reflect the thoughts of some important figures at the time of the establishment of the American Philosophical Society upon its present foundations.

In order to better understand Dr. Evans's sentiments, it appears necessary to examine his role in the Young Junto and his interest in "philosophical" matters and American improvements. Naturally his profession made him a likely member of a learned society; hence, in 1761, he was elected to the Young Junto. Little is known of Dr. Evans's early association with the society. Like Franklin's Junto of 1743, the young Junto also died. In 1766, two years after it was enlarged and reanimated as the American Society for Promoting Useful Knowledge, Dr. Evans became a vigorous member. At the time of the rejuvenation of a society dedicated to American improvements, the colonies as a whole were also taking more and more interest in domestic manufactures, both as a weapon against British measures such as the Stamp Act and Townshend Acts and also as a sign of their maturity. Dr. Evans, although

viewing the frequent newspaper accounts of American manufacturing as imprudent, complained to Franklin of the "unconstitutional" laws of Parliament and his fear that they "will alienate their [the colonists'] affections from the Parent Country" (16). This is not to suggest that he opposed encouraging American manufacturing; on the contrary, manufacturing was an economic necessity. Nevertheless, when he discussed establishing manufacturing societies throughout the colonies, he did so with the design of binding the Empire more closely. In fact, manufacturing would be a "great conciliatory step". Thus he lamented that "we have not more earnestly endeavored, to cooperate w[i]th the Society for the propagation of Arts and rival the produce and manufactures of other Nations, rather than Great Britain" (17).

The "revival" of the American Philosophical Society precipitated Dr. Evans's disillusion with the only learned society in the British colonies. Dr. Thomas Bond, one of the original members of Franklin's Junto of 1743, had not been invited to join the American Society, and so he and the Shippens, who had not been asked to join John Morgan's medical society, "activated" the American Philosophical Society to rival the American Society. Dr. Evans declined their invitation to participate in the new organization, begging his wife's illness as an excuse. His wife was ill and she died in March 1768; but, in truth, such was not the real reason for Dr. Evans's refusal to attend the organization at Bryne's. As he confided to William Franklin who shared his sentiments, "I had rather stand alone, than join them, because it is preposterous to associate in philosophical disquisitions, w[hi]ch require the utmost precision and veracity, with Smith, Alison, Ewing, and Williamson, whom we know have stuck at no lies to injure us" (18). Indeed, Bond's "hobby horse" appeared to him as merely a ruse to increase the reputation of the College of Philadelphia, for all its trustees were members of the American Philosophical Society (19).

The two rival organizations functioned for a time, but Philadelphia, although the largest city in the British colonies, was incapable of supporting two philosophical societies. Dr. Evans's reaction to the proposed merger was not unexpected. Although he attended the first few meetings after the merger and signed for the Committee on Husbandry and American Improvements, his enthusiasm was spent and he rarely attended meetings during the last years of his life. He explains his actions to Franklin by condemning the professors at the college who pressed for the merger in order "to avail themselves of the Labours of others and filch reputation from their knowledge" (20). Subsequent experiences in the grand project of the new organization—the observation of the Transit of Venus—confirmed Dr. Evans's opinion of the faculty. According to Dr. Evans, both at the State House and Norriton, members of the college unjustly assumed credit. For instance, although Hugh Williamson was not even a part of the observations and John Ewing was last to call "contact", the newspaper account records the Transit was viewed by Ewing, Shippen, Williamson, and Pryor. Thomas Pryor actually called "contact" first. Dr. Evans could not be a silent witness to this; he snarled, "A pirate and a highwayman, I [have] some charity for; but a lyar and filcher of reputation, are to me, the most detestable scunks in human society" (21). Inconsistently, Dr. Evans subscribed £6 to the College of Philadelphia in 1772 (22).

Although Cadwalader Evans might boycott the American Philosophical Society meetings, he could not ignore its activities nor other philosophical matters. It was Evans who communicated the first accounts of the observations of the Transit

to Benjamin Franklin in England; it was Evans who communicated a draft of a register to regulate heat invented by William Henry, the Lancaster armorer; and it was he who informed President Franklin of the perpetual "rancour of party" which threatened the American Philosophical Society. Dr. Franklin was obviously disturbed by the conflicts within the society which were based partially on political beliefs. Would that the American Philosophical Society might be like the Royal Society, after which it was patterned, and effectively forbid any political discussions at meetings! But then Dr. Evans's remarks concerning the society must be regarded with caution. When distinguished European scientists lauded the first volume of *Transactions* in glowing terms, Dr. Evans merely conceded "some papers may be thought curious, some usefull, but certainly, many of them should not have been published" (23).

In spite of Cadwalader Evans's obvious distaste for certain members of the American Philosophical Society, he managed to attend four meetings in 1770. No doubt the only attraction of the society was its interest in the cultivation of silk. Indeed, many members of the Society were also promoters of the Pennsylvania Silk Society. As an overseer of the latter organization, Evans wrote to Franklin and others in Europe for information on how best to cultivate silk, nursed his own mulberry trees, and encouraged colonial efforts to build silk culture into a thriving enterprise. Among the first bits of information received from Benjamin Franklin were four French treatises which Dr. Evans delivered to the Reverend Jonathan Odell, minister at St. Mary's, Burlington, to be translated and published. Franklin also sent an extract from Ogilby's *China* on the importance of using small mulberry trees and some Chinese drawings of silk raising from Dr. John Fothergill. Pierre de Boissier, Dr. Samuel Pullein, Patterson, Walpole, and Duhalde are but a few from Europe who sent information and encouragement via Franklin (24).

Soon Dr. Evans could inform Franklin happily that "the experiment takes the country beyond our most sanguine expectations" (25). Indeed, the Silk Society went so far as to erect a filature, hire an experienced superintendent, and solicit for reelers in Georgia and Italy. Dr. Evans persuaded Thomas Willing and Samuel Wharton to have their agents in Spain and Italy procure silkworm eggs. Unfortunately, the eggs, when they arrived, were "putrid and offensive to an uncommon degree". To avoid a repetition Evans suggested that future eggs be shipped in "wide mouth[e]d bottles, and several grooves [be] cut in the sides of the corks, so as to admit a free communication of air"; he also suggested that the containers be hung from the beams of the cabin rather than be buried in a chest (26).

Acquiring foreign silkworms, building a filature, hiring reelers, and shipping skeins to England entailed great expense and the Silk Society sought assistance to lighten the burden. Southern colonies already received a bounty from Parliament for raising silk, and in 1769 Dr. Evans asked Thomas Wharton if this bounty might also be granted to the middle colonies. Evidently the answer was affirmative, for in 1772 the Silk Society received a bounty of £ 35.19.6. The Pennsylvania Assembly proved another source of financial encouragement. In 1769 Dr. Evans suggested that the proceeds from a tax on dogs might be used as a premium for every pound of cocoons; less than three years later he informed Franklin that the Assembly had decided to encourage the cultivation of silk by offering a premium for mulberry trees. Further attempts at receiving approval from important quarters is reflected in the gift of American silk which the

society requested Franklin to bestow upon the queen. All appeared to be progressing at a most encouraging rate, for beyond the silk sold in England, fifty-four pounds reeled at the filature was manufactured by private parties in Pennsylvania into gloves, stockings, and the like. Their high hopes, however, were not sustained and the Silk Society floundered and died during the War for Independence (27).

By 1772 Evans was not well, and he took Dr. Thomas Parke, a member of the American Philosophical Society, as his medical partner. William Franklin wrote to his father in April 1773 that "little hopes of the Doctor's Recovery [remain] tho' perhaps he may be able to linger out a few Months longer" (28). The doctor, realizing his condition, wrote his will leaving his wife's silver plate and china to his niece, Ann Biddle, and the bulk of his large land holdings to his brothers and sisters: Rowland, John, Elizabeth, and Jane. This real estate included sizable lots in Cumberland and Bucks Counties, some in North Wales, some islands in the Delaware, and eight city lots bounded by Sixth and Vine Streets. His brothers and Abel James and Owen Biddle of the American Philosophical Society were to be his executors, and three other society members witnessed the will (29).

In May 1773, the doctor confided to Israel Pemberton, "I am more unwell the beginning of every week" (30). On June 30, 1773, the fifty-three-year-old Dr. Cadwalader Evans died. He was interred at the Friend's Burying-ground at North Wales. Besides his property mentioned in his will were Nicholas Scull's map of Pennsylvania, two maps of America and Europe, and a map of Nova Scotia, a thermometer, a barometer, and medical equipment valued at £34.9.5. The contents of his medical shop were itemized (31):

Sundry Gallipots, Shop Furniture	£13.16.11
shop desk and book case	1. 5. 0
iron grate and shovel	[illegible] 6
sundry medicines	[illegible] 0 0
Albinus's Drawings of Human Body	10 0 0
Sundry Books, mostly broken sets	3. 0. 0

When news of the doctor's death reached London, Benjamin Franklin lamented, "I grieve to hear of the death of my good friend, Dr. Evans, I have lost so many, that I begin to fear I shall find myself a stranger among strangers when I return" (32). Dr. Evans would be remembered by Philadelphians as one who sustained his final illness "with the Composure and Resignation of Mind which are a certain Evidence, and a happy Consequence of having filled the Sphere of Life allotted to him with Rectitude and Integrity. . . . In his Sentiments he was liberal, in Argument solid, acute, and fastidious, but above all, in his Friendships he was ardent, steady, and sincere" (33).

REFERENCES

1. *Pennsylvania Gazette*, 7 July 1773.
2. Norris, G. W.: *Early History of Medicine in Philadelphia*, pp. 15–16, Philadelphia, 1886.
3. Ellin Evans to Dr. John Fothergill, 21 Third Month 1752. Dreer Collection, Fothergill Correspondence, Historical Society of Pennsylvania.
4. Pemberton Papers, V, 1. Historical Society of Pennsylvania.
5. Jenkins, H. M.: *Historical Collections relating to Gwynedd*, pp. 161, 168, Philadelphia, 1884; John Ross to Cadwalader Evans, 13 November 1748, American Philosophical Society Miscellaneous Manuscripts; William W. Hinshaw, *Encyclopedia of American Quaker Genealogy*, II, p. 518, Ann Arbor, 1938; Genealogical Society of Pennsylvania, *Publications*, IX, p. 13; Philadelphia Monthly Meeting, Minutes, 30 Second month 1742, 26 Twelfth month 1755.
6. Thacher, James: *American Medical Biography*, I, p. 265, Boston, 1828.
7. Evans, Cadwalader: A relation of a cure performed by Electricity. *Medical Observations and Inquiries*, pp. 83–86, 1757.
8. *Pennsylvania Gazette*, 7 July 1773.
9. *Pennsylvania Gazette*, 7 July 1773; Thomas G. Morton and Frank Woodbury, *History of the Pennsylvania Hospital*, p. 146, Philadelphia,

1897; Philadelphia Monthly Meeting, Minutes, 30 Eleventh month 1759.

10. Franklin Papers, I, p. 129, American Philosophical Society.
11. Norris, *op. cit.*, p. 128.
12. *Hazard's Register of Pennsylvania*, 1 August 1835; Franklin Papers, II, p. 104, American Philosophical Society.
13. *Ibid.*
14. Franklin Papers, I, p. 129, II, 180, American Philosophical Society; *Hazards's Register of Pennsylvania*, 1 August 1835.
15. *Hazard's Register of Pennsylvania*, 1 August 1835; Franklin Papers, LVIII, p. 52, American Philosophical Society; C. Evans to the Physicians of the Hospital, 19 April 1773, Hutchinson Papers, American Philosophical Society; Carl and Jessica Bridenbaugh, *Rebels and Gentlemen*, p. 247, New York, 1942.
16. Franklin Papers, II, p. 104.
17. Franklin Papers, II, p. 104; Bridenbaugh, *op. cit.*, p. 334; *Works of Benjamin Franklin*, Jared Sparks, ed., VII, p. 537, Boston, 1838; *Hazard's Register of Pennsylvania*, 1 August 1835.
18. Franklin Papers, LVIII, p. 52.
19. *Pennsylvania Gazette*, 17 March 1768; Franklin Papers, XLVII, p. 43.
20. Franklin Papers, LVIII, p. 52.
21. Franklin Papers, II, p. 201.
22. Morton and Woodbury, *op. cit.*, p. 372.
23. Franklin Papers, II, pp. 180, 184, 201, III, p. 57; Sparks, *op. cit.*, pp. 454–458, 485–486; *Hazard's Register*, 1 August 1835.
24. *Ibid.*
25. Franklin Papers, III, p. 57.
26. *Ibid.*
27. Franklin Papers, II, p. 184; Sparks, *op. cit.*, VII, pp. 456–457, VIII, pp. 3–5; Benjamin Franklin to Cadwalader Evans, 22 August 1772, Franklin Letterbook, American Philosophical Society.
28. Franklin Papers, III, p. 149.
29. Philadelphia County Will Book P, 434; Franklin Papers, LXIX, p. 8; *Freeman's Journal*, 10 March 1784; *Colonial Records*, XV, p. 379, Harrisburg, 1853; *Pennsylvania Magazine of History and Biography*, LXXV, pp. 237, 244, 258, 1951.
30. Pemberton Papers, XXIV, p. 172, Historical Society of Pennsylvania.
31. Inventory of the Estate of the late Dr. Cadwalader Evans, No. 304, City Hall Annex, Philadelphia, 1773.
32. *Writings of Franklin, Albert Henry Smyth*, ed., VI, p. 117, New York, 1906.
33. *Pennsylvania Gazette*, 30 June, 7 July 1773.

The Therapeutic Experience of Mr. Henry Jones[1]

By ELLIOTT M. HEIMAN, M.D.[2]

THE current record of Mr. Henry Jones[3] begins with his visit to the medical social worker at a downtown general hospital on July 1, 1966. Mr. Jones is a 54-year-old Negro man who is separated from his wife and lives alone. He has been on DPA "total disability" for the past four years because of a crippled right leg and "emotional problems". The social worker said, "Mr. Jones is very upset because his boarding house landlady owes him money. He threatens to commit suicide." A psychiatry resident at the mental health clinic who saw Mr. Jones two days later did not think that he would "jump off a bridge" as he threatened and felt that all would be well if the money problem could be settled. The money problem was solved, but on July 20 the same social worker noted, "Mr. Jones is still depressed with so much time on his hands," and referred him back to the mental health clinic. I saw him for the first time on July 26.

Mr. Jones made a very good first impression. Although obviously sad and tense he was well-groomed, well-mannered and articulate. He walked with a marked limp but without a cane. He described with genuine feeling his lonely, restless days and his nights filled with fretful sleep and nightmares. He recited a list of suicide attempts which began in 1962 in the same general hospital. At that time he said that he tried to roll his wheel chair off a ramp after he had been told that his leg would be permanently crippled. He added that he had subsequently slashed his legs and jumped out of a window. He stated clearly that his main problem was idleness and that he needed help so he would not hurt himself again.

I put Mr. Jones on a strong tranquilizer, a mood elevator, underlined *occupational rehabilitation* on my consult sheet, and told him to come back the following week.

History

Mr. Jones was the only informant.

He was born in rural Virginia, the third eldest of seven children. He has no memory of his father. His mother never talked of him, and he thinks that his parents were probably not married. His earliest memory is of his stepfather beating his mother. "I hated him and got to hate her because she took it. . . . I could have killed him." His "grandfather" was a Baptist preacher, and he states proudly that his family spent all day Sunday in church. He remembers always being the serious, moody type and keeping to himself.

Mr. Jones quit school in 9th grade and worked as a laborer. In 1942 he enlisted in the Marine Corps and passed all the tests until the psychiatrist asked him how he got along with people. His response, "O.K. if they don't bother me", caused him to be rejected. He commented, "Being turned down made me feel like I wasn't a man."

About this same time Mr. Jones married. He said that his mother-in-law dominated everything. He "respected but hated" her. Life was so painful he would frequently go to his room and weep. After leaving

[1] Kenneth E. Appel Award Essay III, presented by the Philadelphia County Medical Society at a joint meeting with The College of Physicians of Philadelphia, 4 April 1967.

[2] Resident in psychiatry, The Institute of the Pennsylvania Hospital, Philadelphia, Pennsylvania 19139.

[3] A fictitious name.

and returning several times he finally departed for good and hasn't seen his wife since 1942. However, he has never had relations with another woman because "in the eyes of the church we're still married".

In 1947 Mr. Jones felt the "call" and enrolled in a non-sectarian Bible school in Ohio. Although he stopped the next year because of lack of funds, he still earned a license to preach of which he is quite proud.

The record from a city hospital states that in 1952 Mr. Jones made a suicide attempt with iodine and received shock treatments. Mr. Jones' story is that while out of work and on DPA he became very moody. He asked DPA to stop his check stating that he wanted a job, not relief. Finally, although still unemployed, he called DPA and reported he had obtained a job. His checks stopped. A minister friend advised psychiatric help. He went to the city hospital and received four shock treatments, but they did no good.

From 1953 to 1959 Mr. Jones was a shipping clerk in a retail store. In 1960 he worked at the Sunday Breakfast Association and in 1961 he was a laborer for a contractor. He says, "I'm fine on any job as long as people ask me to do something, but if they order me, I say, 'Thank you, I'm leaving.' "

The record from the general hospital states that in March 1962 Mr. Jones suffered an occlusion of the right femoral artery. After an operation to remove the clot, he developed complications and finally a crippling right foot drop. Soon after being told that he was "permanently disabled", Mr. Jones threatened to roll his wheel chair off a ramp. The psychiatrist who was immediately called diagnosed Mr. Jones as schizophrenic and recommended kindness, consideration and tranquilizers. Mr. Jones was referred to a half-way house for their program. An accompanying note said that he was unemployable because of "emotional problems".

The half-way house record indicates that Mr. Jones worked in the maintenance shop and the snack bar or taught pinochle in the lounge. However, he would soon grow discontented and disappear, only to reappear again in a few months. He continued this pattern from 1962 until July 1966 when his current treatment began.

On July 13, 1963, the records from the general hospital receiving ward note that Mr. Jones reported that he had taken an overdose of seconal. He appeared quite anxious and said that he "was not working, and plagued with suicidal thoughts, had crying spells and feelings of hopelessness". He was referred to a psychiatric unit but never went.

The half-way house records state that in March 1964 he threatened suicide by jumping out a window. "He was seen by police and discharged." The record further comments that for Mr. Jones "there is little challenge and momentum in (our) program, . . . (he) needs leisure time activity that is meaningful, purposeful and dignified".

On September 6, 1964, Mr. Jones was readmitted to the general hospital for an attempt to correct his foot drop. However, the operation could not be performed because of infection of his teeth. In the face of this disappointment, Mr. Jones again threatened suicide and was referred to the state-supported psychiatric reception center.

The evaluation there reiterated his withdrawn nature and his hypersensitivity to criticism. The I.Q. test score was 116 and the MMPI showed a "strong neurotic depressive element with a realistic perception of people and things". The recommendation was for "outpatient support psychotherapy" with "job placement and training secondary" because "he could not tolerate the interpersonal demands and conflicts of employment". The examiner therefore suggested that he continue at the half-way house

and be followed at a psychiatric outpatient clinic.

The general hospital clinic records state that Mr. Jones presented himself on September 26, 1964 seeking help to overcome his depression in the hope of getting a job. The usual symptoms of insomnia, restlessness and suicidal ideation continued for three months until the surgeons began making plans for rehospitalization to correct the foot drop. In March 1965 the psychiatry notes after the operation read, "Leg in cast, not depressed"; April, "Leg still in cast, not depressed"; May, "Doing very well, attends church, reads the Bible". At this point psychiatry notes end. Orthopedic clinic says that in June the sutures were removed and in July the wound became infected. In December he was rehospitalized for a bone fusion to help him walk. There were no further notes until he reappeared in July 1966.

Therapy

My evaluation of the problem presented by Mr. Jones was that "meaningful, purposeful and dignified" employment would alleviate his depression. Therefore, job placement should be the *primary* effort. This position was different from the previous positions which implied that job placement could be considered only *after* "support psychotherapy" had cured his depression.

The social worker promptly referred Mr. Jones to the Shut-in Society for employment. He never took the job. The reason that Mr. Jones refused the job was that the work consisted of packing matches in match boxes.

With the failure of the shut-in idea, the social worker suggested volunteer work at the hospital. Mr. Jones was interviewed by the director of volunteers and accepted. She told him, "We need you and you may work as much or as little as you wish." He started work on August 17.

I saw Mr. Jones two weeks after he began volunteer work. He told me that he no longer felt restless, that he was sleeping well because he came home tired at night and that he had no more thoughts of suicide. Over the course of several weeks he gradually gained weight, seemed more relaxed and sat up a little straighter. Always well-groomed and alert, he projected a new assurance in his volunteer worker's jacket. He said that doing good for others made him feel like a man. Nobody told him what to do, and he did more than his share. Sometimes a nurse got too demanding but he ignored her. He felt very well. By October 21, all medication was stopped.

Mr. Jones' job is to deliver items from Central Supply to all parts of the hospital. He is so enthusiastic, and the hospital so short-handed, he won't take a day off. He is liked and respected by everyone, and the ultimate compliment is that the employment office is about to offer him a paying job.

I last saw Mr. Jones on December 23. He was in the hospital for the evaluation of G.I. complaints which were diagnosed as caused by a hiatal hernia. He appeared in good spirits with no return of his depressive symptoms. On his bedside table were two get well cards. One was signed by the telephone operators whom he had helped by delivering telephone books. The other card had the signatures of all the people at Central Supply. Mr. Jones was obviously pleased by the messages and was eager to return to his job.

Discussion

Mr. Jones is a man with high ideals who follows strictly the code of the Baptist Church preached by his grandfather. He doesn't smoke or drink, has remained celibate for 25 years after separating from his wife, reads the Bible, preaches and likes to do good for others. He had been a serious and moody person all his life. He has lived alone for many years and has a long and unstable job history because of

his sensitivity to taking orders. From the time of his "total-permanent disability" four years ago, his life situation has become much worse. He began to have frequent and prolonged episodes of severe moodiness characterized by restlessness, sleeplessness, crying spells and suicidal thoughts.

It is quite clear that being defined as "totally and permanently disabled", and therefore unemployable, severely undermined Mr. Jones' self-esteem. Certainly, Mr. Jones wishes to be taken care of, but "supportive" therapy alone only perpetuated a dependent and charity-taking position very destructive to his self-image. The jobs at the half-way house helped to some extent, but these jobs ultimately failed because they were still only "therapy" that was being given to him; whereas, at the general hospital he is giving a service which is really needed.

An important element in Mr. Jones' self-regard is his desire to do good for others. The volunteer job perfectly fits his needs. He does a service for the people in Central Supply who need the items distributed around the hospital, and he is welcomed by the people in the various departments of the hospital who need what he is giving. Another important factor for Mr. Jones' self-regard is that the work is done voluntarily. He chooses; he is not ordered to help. This opportunity to freely choose to do good for others is the ideal combination to boost Mr. Jones' self-esteem and make him feel like a man. It perfectly counteracts the helplessness and frustration of being "no good to anyone" and living on charity.

The record explicity states that Mr. Jones is unemployable because of his severe symptoms. It implies, but never explicity states, the reverse, that is, that Mr. Jones has severe symptoms because he is defined as unemployable. Certainly symptoms can interfere with work, but they can also disappear with work. The key question is how to evaluate the indication for "work therapy" and then find the job to best meet the needs of the patient.

Memoir of Paul C. Colonna 1892–1966*

By EDGAR L. RALSTON, M.D.

PAUL C. COLONNA, M.D., died in Philadelphia, Pennsylvania on Tuesday, June 7, 1966. On Monday, the 6th, he had made rounds at the Hospital of the University of Pennsylvania, visited patients on whom he had recently operated and exchanged his usual greetings with other members of the hospital staff. Death came suddenly less than twenty-four hours later. Thus, for forty-five years, to the last day of his life, he devoted his full energy to what he loved, the practice of orthopaedic surgery.

Paul Crenshaw Colonna was born in Norfolk, Virginia on December 19, 1892, the son of Samuel and Alice Colonna. His primary education was obtained in the public schools of Richmond, Virginia. He was granted his A. B. degree at Randolph-Macon College in 1915 and his M.D. at Johns Hopkins University in 1920. After completing an internship at St. Elizabeth's Hospital in Richmond, he began in 1921 a sixteen year association with the Hospital for the Ruptured and Crippled in New York, where he served successively as resident, and as assistant and associate chief of clinic. At the same time he started his academic association at the College of Physicians and Surgeons of Columbia University where he was Clinical Professor of Orthopaedic Surgery from 1935 to 1937. In 1937, Dr. Colonna accepted the invitation to become Professor and Chairman of the Department of Orthopaedic Surgery at the University of Oklahoma in Oklahoma City. He remained there until 1942 when he came to Philadelphia as Professor and Chairman of the Department of Orthopaedic Surgery at the University of Pennsylvania, succeeding Dr. A. Bruce Gill in that chair. In the January following his removal to this city, he was elected a Fellow of this college and for the remainder of his life he was an active participant in its affairs. He served as a member of the committee for the Mütter Museum and College Collections for a number of years. In 1943 he delivered the Nathan Lewis Hatfield Lecture, "The Role of Surgery in the Chronic Arthritic Patient".

As an orthopaedic surgeon, Dr. Colonna was widely known for the design of two surgical procedures for the hip joint, one for unreduced congenital dislocation in children and the other for ununited fracture of the femoral neck. In 1932, he described in the *Journal of Bone and Joint Surgery* his operation for unreduced congenital dislocation of the hip in the older individual. The technical features of this operation included as preliminary treatment "a thorough stretching of the affected hip under an anesthetic and subcutaneously tenotomizing the adductor muscles". Then "a long plaster spica is applied to the unaffected side and moleskin traction of twenty-five to thirty-five pounds is effectively maintained on the dislocated side". Several weeks later, when the head had been reduced to the level of the acetabulum, "the child was prepared for operation. The greater trochanter with its attached muscles was chiseled through and turned upward, and the capsule covering the head was rather easily dissected free from the surrounding tissues. When the

* Read before The College of Physicians of Philadelphia, 1 March 1967. Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

isthmus of the capsule was reached, it was cut through and the head of the bone inspected through this aperture. The aperture in the capsule was then closed. With the Doyen reamer a capacious acetabulum was formed as near the original site as the preliminary traction had made possible. The head of the bone with its covering of capsule was then placed in the newly formed acetabulum and with the limb in abduction, the greater trochanter was sutured back into place" (1). Subsequent reports of this operation included a careful follow-up of the first patients on whom he had performed this procedure. Many of the early patients were seen thirty and thirty-five years following their operation and were always available for presentation before medical groups.

In 1935 he described in the *Journal of Bone and Joint Surgery* his operation for non-union following fracture of the femoral neck, sometimes called the trochanteric reconstruction operation. This operation "consists essentially of severing the muscles attached to the greater trochanter very close to their insertion to the bone, care being taken to leave a fibromuscular layer covering the region of the greater trochanter. The capsule is then divided close to the femur and the loose head fragment is removed. After the greater trochanter has been placed deeply within the acetabulum, the abductor muscles are then transplanted downward as far as they will reach and are attached by a bony trough to the lateral surface of the shaft of the femur" (2).

His specific interests in his surgical specialty thus covered age groups from the very young to the elderly and he was as much at home on the children's ward as he was at the bedside of the eighty-year-old. Both of these operations were developed and subsequently described with definite boundaries as to their indications and contraindications. Dr. Colonna recognized these and frequently pointed out that the best results could not be achieved if these carefully constructed guide lines were ignored.

Dr. Colonna was an orthopaedic surgeon's orthopaedic surgeon. In his later years, most of his patients, both the young child with a congenital hip problem and the elderly patient with a hip reconstruction problem, had had several previous operations and were referred to him because of these previous failures. He spent no time in regretting what the treatment might have been but studied the problem as it was presented to him and then wasted no time in pushing forward to its solution. He continuously taught, both by his words and in his own actions, that the surgical procedure was only a link, albeit an important one, in the long chain of related therapy that led finally to useful function of the part. He was a skilled surgeon, who with little loss of motion or time, got down to the work to be done even though the anatomical parts were grossly distorted from the original process or by the later attempts of other surgeons to correct it. His assistants quickly realized that this dexterity was not necessarily due to the fact that he had been through this exercise many times before but also because he had reviewed this particular problem in detail, and, therefore, he knew just what he wanted to do step by step. Although his manual skill was admired by his assistants and associates, he never emphasized this, nor did he spend much time discussing this phase of reconstruction either in formal presentations before orthopaedic groups throughout this country or in his bedside teaching with house staff and medical students. His rounds of ward and private patients alike were never hurried. He was interested in details of preoperative and postoperative management and it was here that he was most effective in his teaching. Surgical ex-

periences were never dramatized but were always properly placed in relation to an entire program of physical, mental and economic rehabilitation.

In addition to this College, Dr. Colonna was a member of a number of medical societies, local, national and international. In 1955 he was elected president of the American Orthopaedic Association and presided at the annual meeting of that association when it met that year in Banff. He was a founding member of the Orthopaedic Research Society and remained vitally interested in its proceedings.

As a teacher, Dr. Colonna stressed the broad general principles upon which all surgery is founded. At the same time in his practice and in his teaching, he would illustrate the endless variety of details these principles could include. His presidential address to the American Orthopaedic Association emphasized the close relationship of orthopaedic surgery to the biological sciences in contrast to the mechanical sciences. In it he stated that "the rehabilitation of our patients will be improved . . . by the realization that the surgeon can assist the natural powers of recuperation but cannot replace them". Dr. Colonna believed in this principle and demonstrated it daily in his work.

Dr. Colonna spared himself no time to work hard at a hobby. He loved the seashore and in rather infrequent off-duty hours he and his wife, Rita, spent time there. Associates and other friends have fond memories of hours spent there in these more relaxed surroundings with this gentleman from the Old Dominion and his hospitable wife. Besides his wife, Rita, two daughters, Alice and Mary, survive him.

So now, American and international orthopaedic surgery has lost another of that last dwindling group of men who have so successfully bridged that era lying between the age of the founders of this specialty and its present-day flowering as a major medical science. He built soundly upon what had gone on before and gave encouragement and opportunity to those who would build following him.

REFERENCES

1. Colonna, P. C.: Congenital dislocation of the hip in older subjects. J.B.J.S. **14**: 277–298, 1932.
2. Colonna, P. C.: A new type of reconstruction operation for old ununited fracture of the neck of the femur. J.B.J.S. **17**: 110–122, 1935.

Memoir of Russell Richardson 1882–1966*

By TRUMAN G. SCHNABEL, M.D.

RUSSELL RICHARDSON was introduced as a Fellow of the Philadelphia College of Physicians on October 1, 1919. His father and maternal grandfather practiced medicine in Brooklyn and Albany, New York, respectively. So it came to pass that the subject of this memoir was born in Brooklyn on March 19, 1882. He received an A. B. degree from Princeton in 1901 and A. M. and M. D. degrees from Harvard in 1911. It should be noted that one academic year of these intervening seven was spent at the University of Pennsylvania.

After the years devoted to a preparation for his life work, it can be said that most of our late fellow's ultimate efforts were brought to bear on pathology. Other efforts, however, were made in the teaching and practice of clinical medicine. That all of this is true becomes manifest when one learns that he carried on the work of an assistant pathologist in the Pennsylvania Hospital from 1911 to 1917 and that he was the Director of Laboratories successively in the Abington Memorial, Methodist and Henry R. Landis Hospitals from 1916 to 1960. All the while, too, his teaching ability was happily recognized by promotions, rank on rank, from Instructor to Assistant Professor of Medicine in the Medical School of the University of Pennsylvania. In addition, he directed a metabolic clinic in the University of Pennsylvania Hospital's Out-Patient Department of Medicine and was also an associate in the George S. Cox Research Institute of the same hospital from 1931 to 1942. He was certified in Clinical Pathology and Pathological Anatomy by the American Board of Pathology in 1938.

Dr. Richardson will always be remembered for a number of reasons. Outstanding among these is the role he played in the developing history of diabetes mellitus. One of the Philadelphia newspapers headlined his obituary in large type letters, "DR. RICHARDSON, DIABETES EXPERT", while another newspaper headlined his obituary similarly, "RUSSELL RICHARDSON, MEDICAL PROFESSOR". His bibliography, dating back to 1909, contains a number of titles indicating the concern of their author with such matters as the nervous system, blood pressure, typhoid vaccines, pneumococcus pneumonia and tuberculosis. The list includes thirteen papers related to different aspects of diabetes. One of these contributions is a "Survey of Tuberculosis Among Diabetics" in which he had the collaboration of a statistician, two phthisiologists and another diabetic specialist.

He undoubtedly turned his special attention to this metabolic disease with unusual alacrity because of the convenient availability of the George S. Cox Research Institute for essential laboratory studies and also because his out-patient clinic would supply diabetic patients for a background approach. Perhaps more important than all of this, however, is the fact that Banting, Best and Macleod put insulin on the therapeutic map in 1921 and thereby created a new widespread interest in diabetes. Some of Richardson's papers are concerned with protamine insulin and protamine zinc insulin.

* Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

His status as a pathologist and a clinician is well revealed by the sort of professional organizations in which he held memberships. This applied especially to those societies related to pathology. Here one finds that he was a founding member of the American College of Pathologists, that he was a member of the American Society of Clinical Pathology, the Society of Experimental Biology and Medicine, and the Philadelphia Pathological Society. He was also a fellow of the Philadelphia College of Physicians and the American College of Physicians, to say nothing of being a member of the American Medical Association, the Pennsylvania State and Philadelphia County Medical Societies. More than this, it is not surprising that he also belonged to the Princeton Club, the Philobiblon Club and Sigma Xi. Memberships in this sizeable and important group of organizations were not sought after by Dr. Richardson, but they sought him. This is believable because he was a quiet sort of a person, unassuming, hardworking and by no means a joiner.

Unfortunately or otherwise, his military career was a short one and was carried on in the Base Hospital of the 9th Division at Camp Funston in Kansas. He entered the service of the Medical Corps of the United States Army on July 21, 1917 as a First Lieutenant, but served only until May 16, 1918 when he was discharged because of "physical disability" incurred in service.

Our late fellow practiced medicine and lived at 320 S. 16th Street in Philadelphia for many years. He was an active philatelist and owned an interesting collection of stamps. He moved out of the city of Philadelphia to Dowling Forge Road, Dowingtown, Pennsylvania in 1950. Here he bought a house and an old grist and cider mill together with an adjacent tract of land. After this purchase and move, he took up his favorite hobby, the transformation of "Shamona Mill" and the planting of hundreds of trees and bushes. All of this gave him great joy.

He remained active in medicine until 1963 and died at Devon Manor, Devon, Pennsylvania on July 22, 1966 after a rapidly developing brain syndrome. He was exceedingly proud of his four sons who are Princeton graduates, as he was. Three of them survive him as does his wife, Esther H. Cole. The College of Physicians of Philadelphia can well be proud of its deceased fellow, Russell Richardson.

TRANSACTIONS & STUDIES

of

The College of Physicians of Philadelphia

Volume 35 (Fourth Series)

Number 2 (October 1967)

Invitation to the Gout

A Consideration of the Role of Various Predisposing and Provocative Factors in the Genesis of Acute Gouty Arthritis[1]

By GERALD P. RODNAN, M.D.[2]

IT has been 10 years now since I first began to visit the Library of The College of Physicians and to avail myself of its fine services and facilities. Imagine, then, my delight some months ago upon receiving a letter from The College containing, not, as I suspected, a reminder concerning overdue charges, but rather the invitation to present this, the second Theodore Franklin Bach Memorial Lecture. Those of my friends who are aware of my special feelings about Philadelphia medicine in general, and The College of Physicians in particular, will know how deeply moved I am to be your speaker on this occasion.

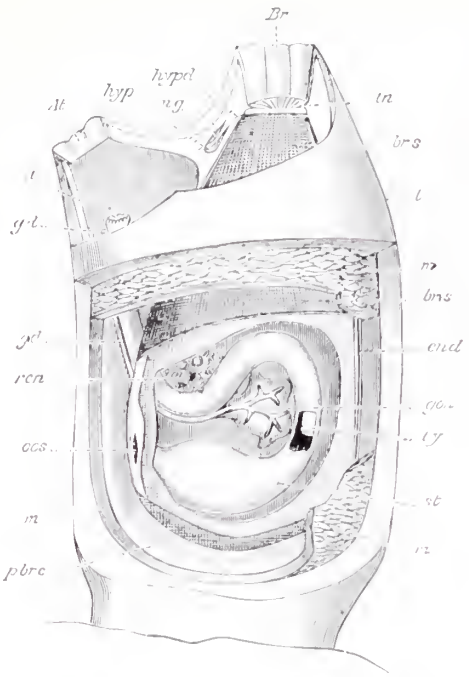
I did not have the good fortune to know the man who is commemorated by this lecture, but I am acquainted with his writings. And so when the Program Committee specified that my address be devoted to the gout, I turned to Dr. Bach's text-book (1) for guidance in the choice of appropriate subject matter. It will be appreciated that being requested to discourse on the gout in Philadelphia is rather like being asked to deliver coals to Newcastle, or steel to Pittsburgh, and the question of "appropriate subject matter" is quickly resolved into a search for some aspect of this disorder which has not already been thoroughly explored by your local sons, including the Professors Wyngaarden, Hollander and McCarty. My talk on the gout should then be viewed in somewhat the same way that Samuel Johnson looked upon a woman's preaching, which he likened to a dog's walking on his hinder legs: "It is not done well; but you are surprised to find it done at all" (2).

I have chosen to devote this Bach lecture to a consideration of the nature of various predisposing and provocative factors in the genesis of acute gouty arthritis, the sum of which factors creates, if you will, an invitation to the gout. That the occurrence of gout is inextricably linked to hyperuricemia has been recognized since 1848, when A. B. Garrod succeeded in demonstrating by

[1] Theodore Franklin Bach Memorial Lecture II, The College of Physicians of Philadelphia, 3 May 1967.

This study was supported by Graduate Training Grant in Arthritis and Rheumatism 2A-5031, Department of Medicine, University of Pittsburgh School of Medicine, and by grants from the Western Pennsylvania Chapter of the Arthritis Foundation and the Health Research and Services Foundation of Allegheny County.

[2] Professor of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania 15213.



Dissection of *Ascidia*, from right side, to show anatomy. *a*, Anus; *At*, atrial aperture; *Br*, branchial aperture; *br.s*, *br.s'*, branchial sac; *end*, endostyle; *g.d*, genital ducts; *gon*, ovary; *hyp*, neural gland; *hyp.d*, the duct leading to dorsal tubercle; *m*, mantle; *n.g*, ganglion; *ocs*, oesophagus; *p.br.c*, peribranchial cavity; *ren*, renal vesicles; *st*, stomach; *t*, test; *tn*, tentacles; *ty*, typhlosole.

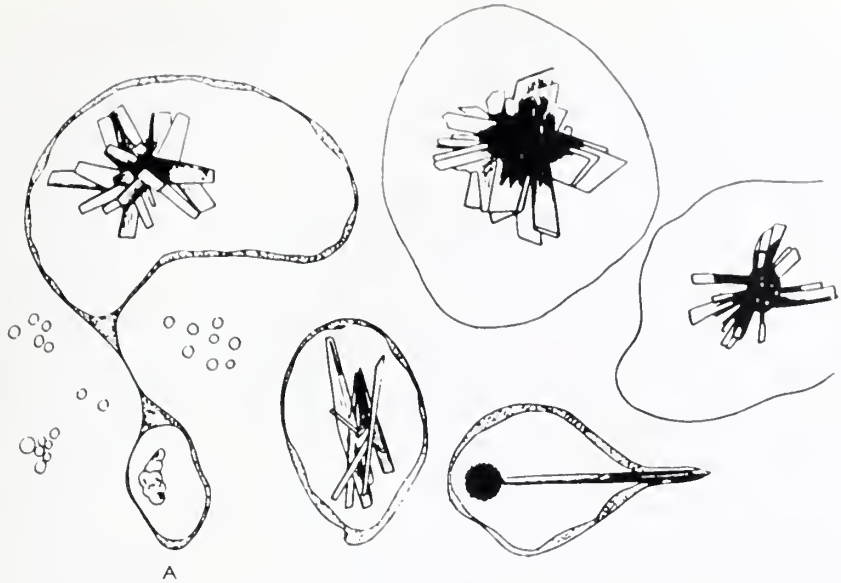
FIG. 1. Dissection of *Ascidia*, from Herdman (12). Note position of renal vesicles (*ren*), which contain deposits of uric acid.

means of his thread test that the serum of gouty subjects contained increased amounts of urate of soda (3). We now know that many, perhaps a majority, of patients with primary familial gout have a defect in the regulation of purine metabolism which leads to the overproduction of uric acid from simple, non-purine precursors (4–7). In many, indeed most, cases, the over-production is combined with a disturbance in the renal disposal of uric acid, such that the proportion of filtered urate excreted by the kidney of the gouty individual is significantly less than that excreted by normouricemic subjects whose serum urate levels have been raised to hyperuricemic heights by the feeding of the purines or the infusion of urate salts (8, 9). Sodium urate is relatively insoluble in body fluids, and longstanding hyperuricemia leads to the steady accumulation of increasing quantities of micro-crystalline deposits in such tissues as articular cartilage, synovium, tendon and tendon sheath, bursae, certain subcutaneous sites and the kidneys. It is the deposits within the joint from which originate the paroxysms of flamboyant arthritis which constitute the clinical hallmark of this disorder.

Comparative Aspects of Hyperuricemia and Gout

In reviewing the comparative pathology of the gout, we find the occurrence of this disease limited to those species in which uric acid represents the major chemical end-product in the catabolism of amino acid and/or purine nitrogen. Thus, man, who lacks the enzyme uricase, finds himself in the company of the uricotelic phyla, the Insecta, Aves, and Reptilia, many members of which are naturally subject to the gout (10, 11).

The most primitive of gouty chordates, however, are neither birds nor snakes nor lizards, but are the tunicates, members of the phylum of protovertebrates. These are marine organisms, which live in either solitary or colonial bliss and are found in practically all parts of the sea (12). The tunicates vary greatly in size and shape, ranging from minute organisms, one hundreth of an inch, to large masses, a foot or more in diameter. The best known of these animals are the fixed forms, termed the ascidians, which are found on the sea-bottom and are popularly known as sea-squirts (Figure 1). The ascidian obtains its nutriment from sea water, which enters a branchial aperture, percolates through a well-defined gastro-intestinal canal and is then ejected via a second opening, the atrial aperture. What interests us most at the moment in these organisms is their mode of nitrogen excretion. Although the ascidians, like most aquatic creatures, excrete nitrogen chiefly in the form of ammonia (13), we find that as tunicates ma-



— Vésicules rénales de jeunes *Ascidia mentula* à concrétions cristallines de diverses formes. En A, deux vésicules sont en voie de se séparer (d'après AZÉMA).

FIG. 2. Drawing of renal vesicles of *Ascidia mentula*, illustrating various crystal forms, from Brien (12a).

ture they bear an increasingly large body burden of uric acid, which is confined as crystalline deposits in numerous clear-walled, ductless structures called the renal vesicles (Figure 2). Each of these vesicles is the modified remains of a part of the primitive coelom or body cavity, and is formed of cells which extract nitrogenous products from the blood circulating in neighboring blood lacunae.

Epidemiological Considerations

When we return to the problem of uric acid metabolism in man, we find that there is evidence of significant racial differences in the prevalence of hyperuricemia and gout (14). To date, the highest serum urate levels have been detected in certain Pacific groups and the lowest in Caucasians, with Negroes occupying an intermediate position. Bremner and Lawrence consider the distribution of serum urate values to be gaussian in character, with a positive skew in all races and with a suggestion of bimodality (14). The main peak in men occurs at 4.5 to 6 mgm/100 ml. in different races. In women the main peak is 1 mgm/100 ml. lower, and the secondary peak is less evident. The origin of these racial variations in serum urate content, and in attendant gout, is a matter of continuing investigation and dispute. Recent studies have revealed that the mean serum urate level in native Filipinos is 5.2 mgm/100 ml., which is the same as the mean for United States Caucasians, and significantly lower than the mean of 6.1 mgm/100 ml. found in previous surveys of Filipinos living in this country (15). These and other observations suggest that environmental factors, including particularly the type and quantity of food intake, play an important part in the genesis of differences in serum urate concentration, and demonstrate how non-genetic factors may complicate the question of the heritable nature of such differences.

In considering the question of provocative or precipitating factors in acute gouty arthritis, we find guidance in a rich folklore which has long linked the disorder to over-

FIG. 3. *French Liberty, British Slavery.* Colored engraving by J. Gillray, published December 21, 1792. Note the slitted shoe, a mark of the gout, worn by the rubicund Englishman.

indulgence in food and drink (16), or, as Sir Richard Blackmore noted, the "dissolute and voluptuous Indulgence of Sensual Appetites" (17). Considered in the terms of classical humoral theory, physical inactivity, excessive preoccupation with study, prolonged medication, gluttony and, especially, reckless drinking, were all believed to interfere with proper concoction, so that, according to Sydenham, crude and undigested humours, after acquiring sufficient putrescent heat, would finally "break out, fall upon the joints, and excite exquisite pain, heat and acridity in the ligaments and membranes which cover the bones" (18). Or, in the view of John Ring, writing in 1811, the gout was a disorder which "principally attacks the higher orders of the community: arising from indolence, intemperance, violent affections of the mind, or an inordinate indulgence of sensual gratifications" (19a).[3]

This being the prevailing notion in Hanoverian England of a disease which was looked upon as "the scourge of the superior classes", it is not surprising to find that the gout was a favorite subject for the caricaturist, who employed the gouty foot as convenient symbol with which to mark the subjects of personal and political satire (20) (Figures 3–5).

Food

Gutman and Yü have shown that a strict low purine diet will reduce the serum urate

[3] "In the happy moment of mirth and convivi-

ality, and the mad career of dissipation, an epicure, or a voluptuary, little dreams of the gout; which hangs over his head, like the sword of Damocles, and threatens his destruction.

Amid the joys of wine, and the shouts of Bacchanals, the still voice of reason is not heard; the sober dictates of discretion are disregarded; and the friendly warnings of the physician are either totally forgotten, or treated with ridicule and contempt" (19b).

FIG. 4. *Every One His Hobby.* Colored engraving published April 24, 1819. Note the gouty alderman riding a turtle, an allusion to the (over-) eating of turtle, a great delicacy, restricted to the wealthy.

levels an average of 1.1 mgm./100 ml. (21), and dietary restriction was long accorded an important place in the management of the gout. During recent years, however, the advent of potent uricosuric drugs and other medications has resulted in a lessened emphasis on the role of diet, as it has become apparent that most patients can have their purine and eat it too. In truth, it appears that few individuals with the gout consume what would be considered an inordinate amount of purine-rich foodstuffs. A notable exception in history appears to have been the Holy Roman Emperor Charles V, who began to suffer from gout at the age of 28 and became so incapacitated that he was forced to abdicate in 1556 at the age of 56 (22). Although said to be allergic to seafood, the emperor could not restrain his desire in this direction, especially for oysters, eel pies, and anchovies, not to mention frog's legs—all of which were consumed in enormous quantities. His noon meal regularly consisted of 20 courses, mostly meat and fish. About eight in the evening he took a plate of anchovies, and a supper followed at midnight. Small wonder, then, that Charles became a poor sleeper and that after the age of forty he is said to have never enjoyed more than four consecutive hours of slumber.

Brochner-Mortensen fed several patients a single purine-rich meal (250gm. of sweetbread) and failed to provoke any gouty attacks (23). One patient who took 500gm. of sweetbread a day developed a typical seizure after 3 days on the regimen. We decided to re-examine the subject of gluttony and the gout and, in order to lend an air of historic authenticity to our studies, resurrected the menus followed at the royal dinners of another gouty monarch, George IV of Great Britain (1762–1830). We have now observed the effects of aldermanic meals in six gouty

FIG. 5. *King Gourmand XVIII and Prince Posterior in Fright.* Colored engraving by R. Cruikshank, published March 16, 1823. The unhappy monarch is Louis XVIII of France, who wears slashed jack-boots as evidence of the gout. The younger man is his nephew, the Duc d'Angoulême.

men, with and without alcohol, and have found that the *elevation* in serum urate levels produced by food alone is relatively slight—usually 2 mgm./100 ml. or less—and relatively transient, lasting no more than 12–16 hours. The kidneys, and probably the gastrointestinal tract as well, are capable of disposing of the increased amounts of exogenous purine products with little difficulty, and it would appear unlikely, with the possible exception of certain extreme cases, on the order of Charles V, that food alone is capable of inducing attacks of the gout.

Fast

It is clear however, paradoxically, that the gout may result from severe deprivation of food, such as employed in the starvation treatment of epilepsy during the 1920's and more recently in the treatment of massive obesity by total fasting. Continued fasting regularly induces marked hyperuricemia, and, if sufficiently prolonged, may lead to the production of acute gouty arthritis in previously non-gouty, normouricemic subjects (24, 25). The rise in serum urate levels induced by starvation, or by exogenous high fat diets, is related to the degree of ketosis which occurs, and it has been shown that certain keto-acids, notably beta-hydroxybutyric acid and acetoacetic acid, the plasma concentrations of which rise markedly in fasting subjects and in those on high fat diets, interfere with the excretion of uric acid by the kidney, presumably through inhibition of tubular secretion (26, 27). When we fasted gouty pa-

tients for two days, there was a regular increase in serum urate concentration, which varied from 1.0 to 2.5 mgm/100 ml. (mean 2.0 mgm/100 ml) and which was quickly reversed by feeding (28).

Alcohol

The belief that gout followed sacrifice at the altar of Bacchus and Venus—that is to say, intemperance and venery—is an ancient one, and we find numerous pictorial representations of this connection (Figures 6–8). Nearly all accounts of the habits of gouty

Fig. 6. Engraved frontispiece of *Scriptum Apologetico—Politicum de Podagra*, by J. A. Schlegel, published in 1687. The gouty cripple (*Podagra*) is assisted by Bacchus and Venus. (Reproduced with permission of the National Library of Medicine.)

Fig. 7. *A Lump of Impertinence*. Colored engraving by T. Rowlandson, published September 30, 1809. Note the bottle of madeira on the table.

patients emphasize the high frequency of chronic alcoholism, or at least occasional episodes of immoderate imbibition, and the grog-blossom nose is almost as frequent a mark of the disease as that articulation badge, the tophus.

In view of the long-standing belief, by physician and layman alike, in a relation between drinking and the gout, it is surprising that detailed studies of the effects of alcohol on uric acid metabolism were not conducted until very recent times. Lieber and co-workers found that the serum urate levels in a group of men admitted to hospital in an intoxicated state were regularly elevated, often reaching frank hyperuricemia, and that these quickly fell to a normal range once the consumption of alcohol was discontinued (29). The rise in serum urate was traced to increase in the concen-

FIG. 8. *The Toastmaster*. Colored plate (no. 22) from the second volume of *The English Dance of Death* by T. Rowlandson, published 1814–1816. The verse (by William Combe):

"The End of Life the Chairman cries;
'Tis drink, and many a Toper dies".

tration of blood lactate formed during the normal metabolism of alcohol. Like the keto-acids already mentioned, lactic acid inhibits the normal excretion of uric acid (30), and if serum lactate rises above 20–25 mgm/100 ml. there may be a nearly total cessation of uric acid output by the kidney (Figure 9).

In order to evaluate the effects of various combinations of food and drink, we hospitalized a number of patients, both gouty subjects and normouricemic individuals, and administered varying amounts of alcohol in the form of beer or whiskey, under controlled conditions (28). Since we had been informed by many of our gouty patients that they often took little or no food during the periods in which they were consuming large amounts of alcohol, we first determined the effects of fasting alone, with the results which I have already described (Figure 10). When the same amounts of alcohol which our patients had previously taken with a low purine diet (with little or no effect on serum urate levels) were taken during brief periods of fasting, the elevations in serum urate levels were found to be even greater than those noted after fasting alone (Figure 11). This increment varied from 1.8 to 3.4 mgm/100 ml., with a mean average rise of 2.5 mgm/100 ml. In contrast to the relatively minor augmentation of serum urate produced by the same amounts of alcohol taken with food (low purine), there was a striking increase in serum lactate, which in most cases reached levels of 20 mgm/100 ml. or greater, which levels are, as previously noted, sufficient to interfere markedly with urinary uric acid excretion. It appears that in some cases, at least, the *combination* of fasting and intake of ethyl alcohol proves additive or mutually potentiating with respect to the effects of each of these factors on uric acid metabolism (Figure 12). The explanation for the greater rise in blood lactate levels on the second of

two fast days during which the patients took alcohol is not completely clear. It is possible that in the fasting state there is a lesser quantity of intermediary metabolates available to promote the reconversion of DPNH formed as a result of the metabolism of the alcohol, thus increasing the coupling of this oxidation with the reduction of pyruvate (available as a result of breakdown in liver glycogen) to lactate.

We have had the opportunity to compare the relative effects of feasts and of alcohol on serum urate levels in two patients. In both cases, the elevation induced by a combination of these elements proved greater than that resulting from feasting alone, and in one instance the patient sustained a typical seizure of what might be dubbed "aldermanic gout" (Figures 13 and 14).

Unlike a number of previous investigators who concluded that there was little or no relationship between fluctuations in serum urate levels and attacks of the gout, we found that the great majority of over two dozen attacks which we observed in these hospitalized patients followed closely upon a rapid change in serum urate level, most often when this level was falling following a temporary elevation induced by fasting or the combination of fasting and alcohol (28). Like others, however, we found that serum urate levels tended to remain stable *during* and *immediately after* the gouty attack, thus giving little or no indication of the variations which had *preceded* the attack.

The change in uric acid metabolism induced by fasting and by the ingestion of alcohol thus represent two additional situations in which rapid fluctuations in serum urate levels are associated with acute attacks of the gout. In some cases, attacks ensue as the serum urate level is *rising* rapidly, such as happens during high fat diets, therapeutic fasts and treatment with certain drugs, including chlorothiazide and pyrazinamide (25, 31, 32). In other instances, it is a rapid *fall* in the serum urate level which appears to precipitate the acute attack. Examples of this latter sequence include the effects of treatment with uricosuric drugs or allopurinol, and the occurrence of gouty arthritis following hemodialysis of patients with chronic renal failure (33).

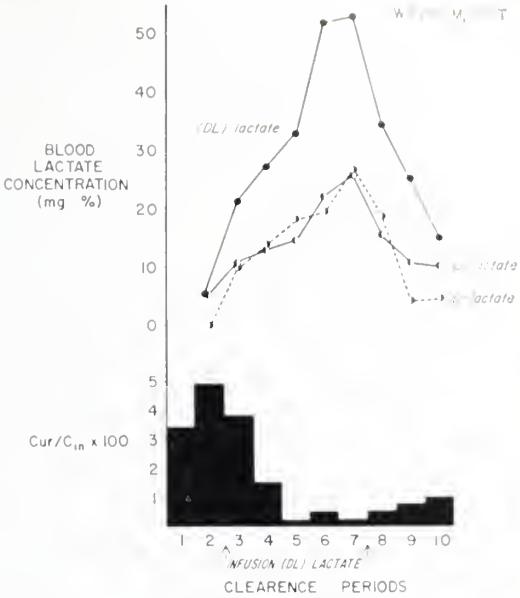


Fig. 9. Effect of infusion of (D, L-) lactate on uric acid clearance in gouty patient WS. (Reproduced from Maclachlan and Rodnan (28) with permission of the American Journal of Medicine.)

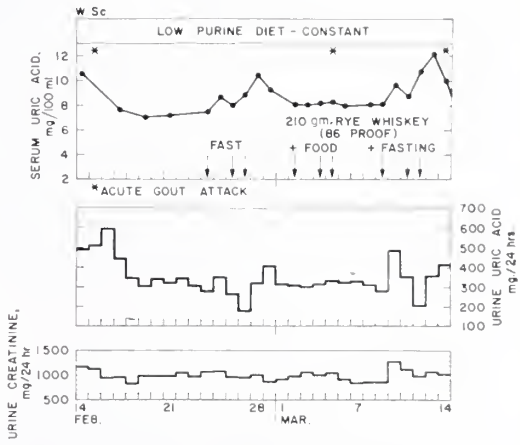


Fig. 10. Changes in serum urate and urinary uric acid values, and occurrence of acute attacks of the gout, in patient WS, with relationship to intake of food and ethyl alcohol (whiskey). (Reproduced from Maclachlan and Rodnan (28) with permission of the American Journal of Medicine.)

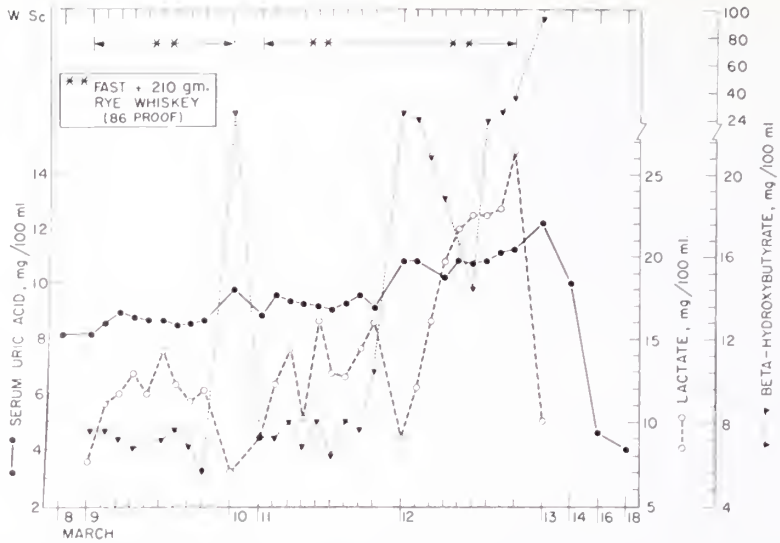


Fig. 11. Changes in serum urate, beta-hydroxybutyrate and blood lactate in gouty patient WS during and after 1- and 2-day periods of fast and ethyl alcohol (whiskey). (Reproduced from Maclachlan and Rodnan (28) with permission of the American Journal of Medicine.)

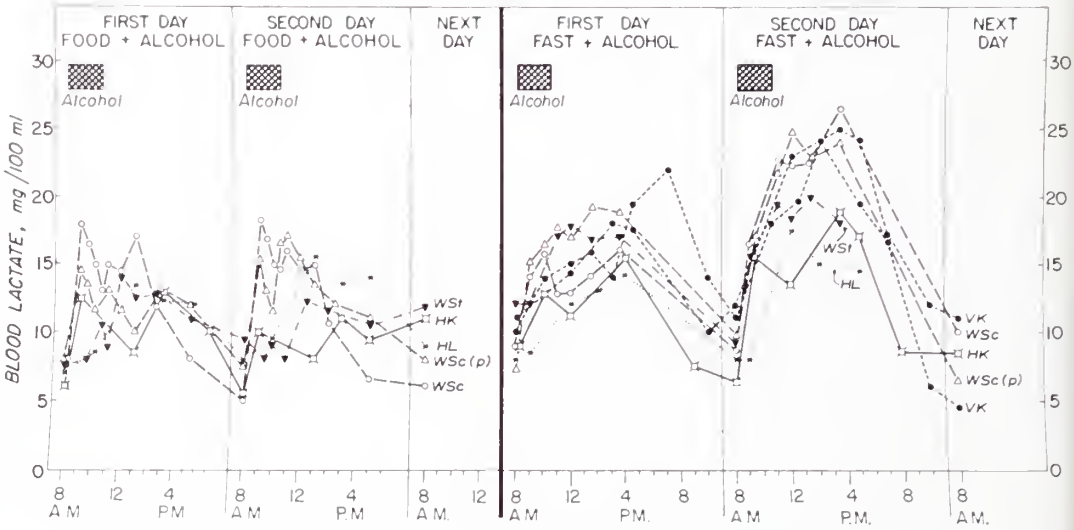


Fig. 12. Comparison of changes in blood lactate levels following ingestion of equal amounts of ethyl alcohol (79–100 gm.) (whiskey) with and without food. (Reproduced from Maclachlan and Rodnan (28) with permission of the American Journal of Medicine.)

Trauma

Trauma is accorded an important role in provocation of the gout by most authorities (34). The injury which is implicated may be trivial, such as a walk of unaccustomed length, prolonged motoring (pedaling) or the donning of the tight new shoes. One reads of "exposition gout", the result of strenuous sight-seeing, and of attacks following activities, pleasurable or otherwise, such as golfing and lawn-mowing. In some cases, it would appear that factors other than trauma provide a more likely explanation for the gouty paroxysm, e.g., the nineteenth

hole, but in other instances it seems that direct injury to the joint may indeed be responsible. When one examines the synovium of gouty patients and finds large urate deposits lying close to the surface, it is not difficult to envision how trauma may lead to the rupture of tophi and the release of large amounts of uratic micro-crystals, thus initiating inflammation of the joint (Figure 15).

Post-operative Gout

History provides us with a number of dramatic examples of gouty arthritis following surgical procedures. The most illustrious victim of so-called post-operative gout was undoubtedly Louis XIV of France, the Sun King, whose royal attack took place on November 20, 1686, approximately 48 hours following operation on his royal anal fistula by the *premier chirurgien*, Félix (35). Not that any surgery performed during the 17th Century is to be considered "minor", but the operative procedures responsible for provocation of the gout need not be among those usually designated as major in scope. Thus typical and severe flare-ups may occur, usually within an interval of 48–72 hours, after such procedures as cataract extraction, bunionectomy or liver biopsy (36). The genesis of post-operative gout remains mysterious. We have sought to determine whether sudden changes in serum urate level might be implicated and were thus gratified to find, in the first two cases in which we were able to obtain serial daily pre-operative and post-operative measurements, that the gout did indeed follow upon a transient dislocation in serum urate levels (Figure 16). In a third case, however, that of a woman who developed severe polyarticular joint inflammation two days after resection of a necrotic femoral head, serum urate levels had shown no significant change in the period immediately preceding the attack. It is possible, therefore, that in some instances post-operative gout may be the result of abrupt fluctuations in serum urate levels, but it does not appear that this change provides an adequate explanation for all instances of this dramatic form of the disease.

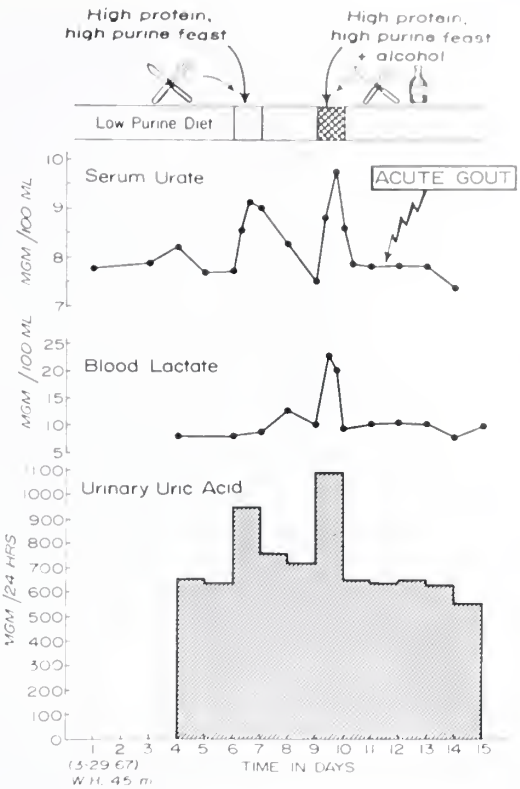


Fig. 13. Comparison of effects of feast and of feast plus ethyl alcohol (stout) on serum urate levels and urinary uric acid excretion in patient WH.

Venery

There has been very little controlled research on the association between venery and the gout, although the "immoderate using of lechery" (37) has long been implicated as a precipitating factor (Figure 17). Sydenham noted that "Gouty patients are, generally, either old men, or men who have so worn themselves out in youth as to have brought on a premature old age—of such dissolute habits none being more common than the premature and excessive indulgence in venery, and the like exhausting passions" (18). In view of the fact that Syd-

FIG. 14. Photomicrograph of phagocytosis of sodium urate crystal by polymorphonuclear leukocyte observed in synovial fluid (knee) obtained from patient W11 during attack of aldermanic gout (×2700).

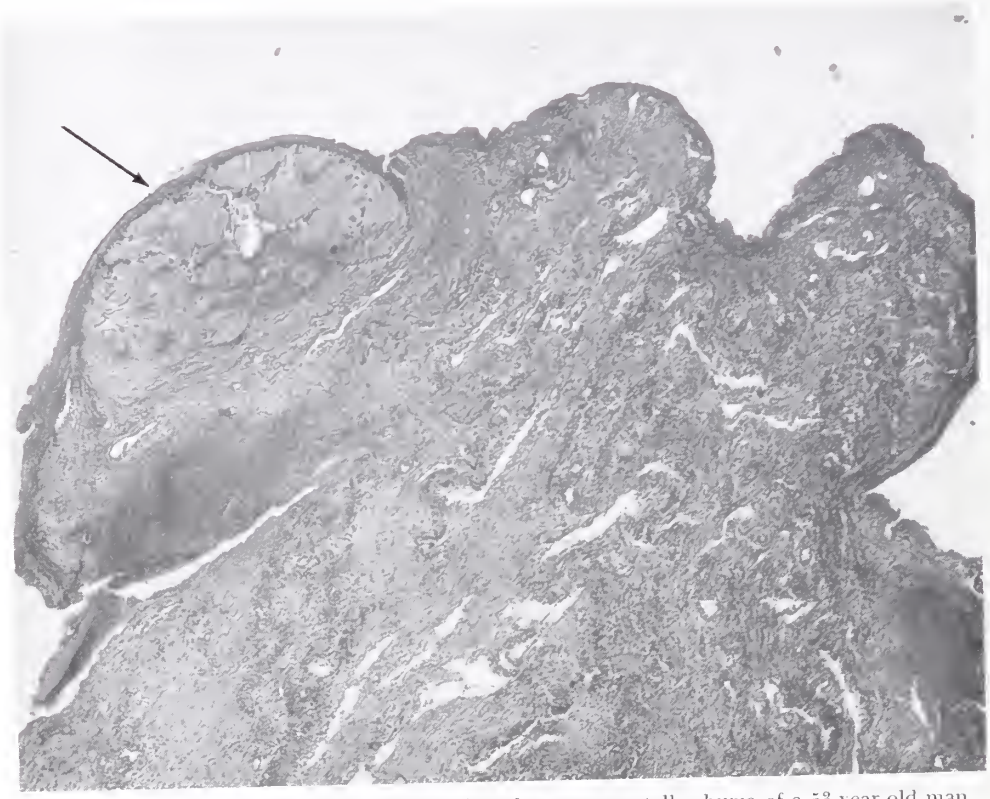


FIG. 15. Photomicrograph (×35) of synovium from suprapatellar bursa of a 53-year-old man with gout. Note large tophus located immediately beneath surface of joint cavity.

enham himself was sorely troubled by the gout, this statement—or confession—assumes added piquancy. The mechanism whereby this exercise may lead to the gout is not clear and much remains to be learned. A recent report on the German cockroach (*Blattella germanica*) suggests, in fact, that

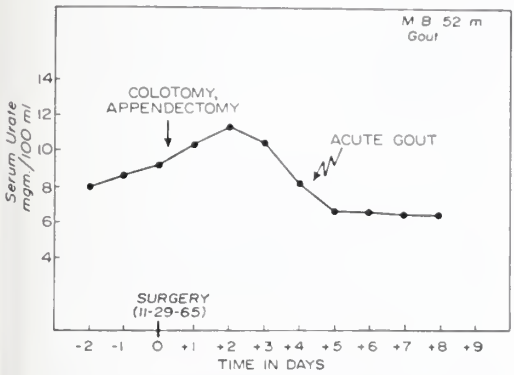


FIG. 16. Course of serum urate levels and occurrence of post-operative gout in patient MB.

sexual congress may exert a salutary effect on the gout (38). We learn that uric acid is stored in the utriculi majores of the accessory sex glands in this insect and that most of this material is eliminated during copulation, being poured over the spermatophore. The authors conclude that mating represents an important means of excretion in this cockroach.

Drug-induced Hyperuricemia and Gout

There are a large number of drugs, several in common use, the administration of which is regularly associated with hyperuricemia and occasionally complicated by occurrence of the gout (Table I) (32, 39–51). With most of these agents, the origin of the hyperuricemia lies in an inhibition of renal excretion of uric acid, and, in the case of pyrazinamide at least, there is evidence

FIG. 17. *A Sale of English-Beauties in the East Indies.* Colored engraving published May 10, 1811. Note the careful inspection of cargo by the gouty English consul who carries a crutch and is wearing an invalid's cap. The small casks in the left foreground, marked Leakes, contain quack remedy for syphilis.

TABLE I

A PARTIAL LIST OF COMMONLY USED DRUGS WHICH MAY INDUCE HYPERURICEMIA AND GOUT

* Salicylates (39, 40)
* Chlorothiazide and congeners (32, 41, 42, 43)
* Pyrazinamide (44, 45)
* Acetazolcamide (42)
* Frusemide (46)
* Ethacrynic acid (47, 48)

† 2-substituted thiadiazoles (49, 50)

* Primary effect on renal excretion of uric acid.
† Primary effect on uric acid production.

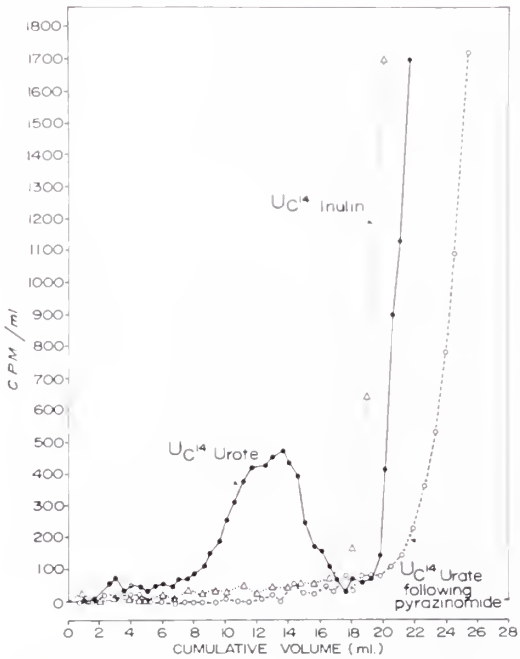


FIG. 18. Distribution of radioactivity in serial urine samples from mongrel dogs following injection of uric acid-2-C^{14} and inulin-C^{14} into renal artery (stop-flow analysis), illustrating apparent inhibition of tubular secretion of uric acid by pyrazinamide (45).

which indicates a specific effect on tubular secretion (Figure 18) (45). Indeed, the influence which many of these drugs exert on the renal handling of uric acid is paradoxical, in that lower doses cause retention (presumably through inhibition of tubular secretion) while larger doses prove uricosuric (through inhibition of tubular reabsorption) (50–51). In the case of the 2-substituted thiadiazoles, hyperuricemia is the result of an increase in the *de novo* biosynthesis of uric acid (49, 50). The development of gout in the course of treatment with mercurial diuretics would appear to be another example of the precipitation of acute attacks as a result of the rapid lowering of serum urate levels (16, 51).

L'ENVOI

No lecture on the gout in the City of Brotherly Love would be complete without some reference to that most famous of gouty Americans, Benjamin Franklin. In reviewing Poor Richard's almanac for the year 1734, long before Franklin's first personal experience with the gout, we find the following advice:

"Be temperate in wine, in eating, girls and sloth;
Or the Gout will seize you and plague you both" (52).

In closing, I would like to acknowledge the contributions of my associates, Dr. Thomas Benedek and Dr. Margaret Maclachlan, and of my assistants, including Mrs. Esther Lipinski, in the studies which I have attempted to summarize this afternoon, and to thank you on their behalf, as well as my own, for the privilege of presenting this lecture.

REFERENCES

1. BACH, T. F. (Editor): *Arthritis and Related Conditions*. Philadelphia, F. A. Davis Co., 1947, pp. 215–245.
2. BOSWELL, J.: *Life of Johnson* (New ed.). London, Oxford University Press, 1953, p. 327.
3. GARROD, A. B.: Observations on certain pathological conditions of the blood and urine in gout, rheumatism and Bright's disease. Med. —Chir. Trans. **31**: 83, 1848.
4. SEEGMILLER, J. E., GRAYZEL, A. I., LASTER, L. AND LIDDLE, L.: Uric acid production in gout. J. Clin. Invest. **40**: 1304, 1961.

5. Seegmiller, J. E., Laster, L., and Howell, R. R.: Biochemistry of uric acid and its relation to gout. New Eng. J. Med. **268:** 712, 761 and 821, 1963.

6. Gutman, A. B., and Yü, T. F.: Uric acid metabolism in normal man and in primary gout. New Eng. J. Med. **273:** 252, and 313, 1965.

7. Wyngaarden, J. B.: Gout, in *Advances in Metabolic Disorders*, Vol. 2. New York, Academic Press, 1965, pp. 1–78.

8. Nugent, C. A. and Tyler, F. H.: Renal excretion of uric acid in patients with gout and in non-gouty subjects. J. Clin. Invest. **38:** 1890, 1959.

9. Lathem, W. and Rodnan, G. P.: Impairment of uric acid excretion in gout. J. Clin. Invest. **41:** 1955, 1962.

10. Schlumberger, H. G.: Synovial gout in the parakeet. Lab. Invest. **8:** 1304, 1959.

11. Appleby, E. C. and Siefer, W. G.: Some cases of gout in reptiles. J. Path. and Bact. **80:** 427, 1960.

12. Herdman, W. A.: Tunicata (ascidians and their allies), in *The Cambridge Natural History*. Ed. by S. F. Harmer and A. E. Shipley, Vol. 7, London, Macmillan and Co., 1904, pp. 35–111.

12a. Brien, P.: *Les Ascidiacés*, in *Traité de Zoologie*. Ed. by P.-P. Grassé, Vol. 11, Paris, Masson et Cie, 1948, p. 636.

13. Goodbody, I.: Nitrogen metabolism in ascidiacea. I. Excretion of ammonia and total non-protein nitrogen. J. Exper. Biol. **34:** 297, 1957.

14. Breiner, J. M. and Lawrence, J. S.: Population studies of serum uric acid. Proc. Roy. Soc. Med. **59:** 319, 1966.

15. Skelth, M. D., Decher, J. L. and Healey, L. A.: Filipino hyperuricemia: an acquired characteristic. Arth. and Rheum. **9:** 877, 1966 (Abstract).

16. Rodnan, G. P.: Early theories concerning etiology and pathogenesis of the gout. Arth. and Rheum. **8:** 599, 1965.

17. Blackmore, R.: *Discourses on the Gout, a Rheumatism and the King's Evil*. London. J. Pemberton, 1726, p. 60.

18. Sydenham, T. A.: Treatise on Gout, in *The Works of Thomas Sydenham, M.D.* Translated by R. G. Latham, Vol. 2, London, The Sydenham Society, 1850, pp. 119–162.

19a. Ring, J.: *A Treatise on the Gout: Containing the Opinions of the Most Celebrated Ancient and Modern Physicians on that Disease*. London, J. Callow, 1811, p. 2.

19b. Ibid, pp. 3–4.

20. Rodnan, G. P.: A gallery of gout. Arth. and Rheum. **4:** 27 and 176, 1961.

21. Gutman, A. B. and Yü, T. F.: Prevention and treatment of chronic gouty arthritis. J. Am. Med. Assoc. **157:** 1096, 1955.

22. O'Malley, C. D.: Some episodes in the medical history of Emperor Charles V. J. Hist. Med. and Allied Sci. **13:** 469, 1958.

23. Brochner-Mortensen, K.: 100 gouty patients. Acta Med. Scand. **106:** 81, 1941.

24. Ogryzlo, M. A.: Hyperuricemia induced by high fat diets and starvation. Arth. and Rheum. **8:** 799, 1965.

25. Drenick, F. J.: Hyperuricemia, acute gout, renal insufficiency and urate nephrolithiasis due to starvation. Arth. and Rheum. **8:** 988, 1965.

26. Scott, J. T., McCallum, F. M. and Holloway, V. P.: Starvation, ketosis and uric acid excretion. Clin. Sci. **27:** 209. 1964.

27. Goldfinger, S., Kleinberg, J. R., and Seegmiller, J. E.: Renal retention of uric acid induced by infusion of beta-hydroxybutyrate and acetoacetate. New. Eng. J. Med. **272:** 351, 1965.

28. Maclaghlan, M. J. and Rodnan, G. P.: Effects of food, fast and alcohol on serum uric acid and acute attacks of gout. Am. J. Med. **42:** 38, 1967.

29. Lieber, C. S., Jones, D. P., Losowsky, M. S. and Davidson, C. S.: Interrelation of uric acid and ethanol metabolism in man. J. Clin. Invest. **41:** 1863, 1962.

30. Yü, T. F., Sirota, J. H., Berger, L., Halpern, M. and Gutman, A. B.: Effect of sodium lactate infusion on urate clearance in man. Proc. Soc. Exper. Biol. & Med. **96:** 809, 1957.

31. Lockh, L. M. and Hubbard, R. S.: Gout. Changes in symptoms and purine metabolism produced by high fat diets in four gouty patients. J. Am. Med. Assoc. **104:** 2072, 1935.

32. Demartini, F. E., Whelton, E. A., Healey, L. A. and Laragh, J. H.: Effect of chlorothiazide on the renal excretion of uric acid. Am. J. Med. **32:** 572, 1962.

33. Caner, J. E. Z. and Decker, J. L.: Recurrent acute (?gouty) arthritis in chronic renal failure treated with periodic hemodialysis. Am. J. Med. **36:** 571, 1964.

34. Hench, P. S.: Diagnosis and treatment of gout and gouty arthritis. J. Am. Med. Assoc. **116:** 453, 1941.

35. LeRoi, J.-A. (Editor): *Journal de la Santé du Roi Louis XIV*. Paris, A. Durand, 1862, pp. 174–5.

36. Hench, P. S.: A clinic on some diseases of joints. Med. Clin. N. Amer. **19:** 551, 1935.

37. Barrough, P.: *The Method of Physick Containing the Causes, Signes, and Cures of Inward Diseases in Mans Body, from the Head*

to the Foote, 6th ed. London, R. Field, 1624, p. 208.

38. Roth, L. M. and Daiko, G. P., Jr.: Uric acid in the reproductive system of males of the cockroach Blattella germanica. Science, **146:** 782, 1964.

39. Yü, T. F. and Gutman, A. B.: Study of the paradoxical effects of salicylate in low, intermediate and high dosage on the renal mechanisms for excretion of urate in man. J. Clin. Invest. **38:** 1298, 1959.

40. Yü, T. F., Dayton, P. G., and Gutman, A. B.: Mutual suppression of the uricosuric effects of sulfinpyrazone and salicylate: a study in interactions between drugs. J. Clin. Invest. **42:** 1330, 1963.

41. Healy, L. A., Magid, G. J. and Decker, J. L.: Uric acid retention due to hydrochlorothiazide. New Eng. J. Med. **261:** 1358, 1959.

42. Ayvazian, J. H. and Ayvazian, L. F.: A study of the hyperuricemia induced by hydrochlorothiazide and acetazolamide separately and in combination. J. Clin. Invest. **40:** 1961, 1961.

43. Dimartini, F. E.: Hyperuricemia induced by drugs. Arth. and Rheum. **8:** 823, 1965.

44. Cutlen, J. H., LeVine, M., and Fiori, J. M.: Studies of hyperuricemia produced by pyrazinamide. Am. J. Med. **23:** 587, 1957.

45. Davis, B. B., Field, J. B., Rodnan, G. P. and Kelly, L. H.: Localization and pyrazinamide inhibition of tubular secretion of uric acid-C^{14} with modified stop-flow technique. J. Clin. Invest. **43:** 1281, 1964.

46. Humphreys, D. M.: Acute gout apparently precipitated by frusemide. Brit. Med. J. **1:** 1024, 1966.

47. Melvin, K. E. W., Farrelly, R. O., and North, J. D. K.: Ethacrynic acid: a new oral diuretic. Brit. Med. J. **1:** 1521, 1963.

48. Cannol, P. J., Ames, R. P., and Laragh, J. H.: Methylenebutyryl phenoxyacetic acid: novel and potent natriuretic and diuretic agent. J. Am. Med. Assoc. **185:** 854, 1963.

49. Krakoff, I. H. and Balis, M. E.: Studies of the uricogenic effect of 2-substituted thiadiazoles in man. J. Clin. Invest. **38:** 907, 1959.

50. Krakoff, I. H.: Clinical pharmacology of drugs which influence uric acid production and excretion. Clin. Pharm. and Therapeut. **8:** 121, 1967.

51. Price, N. L.: Gout following salyrgan diuresis. Lancet **I:** 22, 1939.

52. *The Papers of Benjamin Franklin.* Vol. 1, January 6, 1706 through December 31, 1734. Ed. by L. W. Labaree and W. J. Bell, Jr., New Haven, Yale University Press, 1959, p. 352.

Benjamin Hornor Coates, M.D. (1797–1881): A Study Based On His Manuscripts*

By MARIAN S. CARSON

Introduction

OF the first two patients admitted to the Pennsylvania Hospital on February 11, 1752, one was listed as "lunatic" (1). From the very beginning, the principal motive which inspired the founders of the hospital, as well as the main argument expressed in their petition to the Provincial Assembly for erecting a hospital, was "the care and treatment of Lunaticks", in order that "they may be restored to reason and become useful members of the community". With the completion of the first section of the building at 8th and Pine Streets, the insane were kept on the lower story, which was partly below ground, each living in specially constructed cells. The records mention the purchase of hand cuffs, "madd shirts of Ticken", "legg irons and chains", and "locks and chains for the cells". Confinement was the primary requirement for these "irregular persons". Until a separate department was built in West Philadelphia, the insane department was said to take up half of the Pennsylvania Hospital buildings and two-thirds of the grounds at 8th Street.

The behavior of the inmates, weird because of their afflictions, became one of the sights of the city. Visitors came, out of morbid curiosity, or to mock and jeer, and the Minutes recorded on May 10th, 1762: "The great crowds that invade the hospital give trouble and create much disturbance". Therefore, Samuel Rhoads and Jacob Lewis were directed to employ a workman to make a suitable hatch door and to get an inscription thereon notifying that such "persons who come out of curiosity to visit the house should pay a sum of money, a groat at least, for admission". This shocking situation was a repeated annoyance to both the poor patients and to the managers. Something had to be done. By 1784, it was decided that no more than two persons might visit the cells, and then only with a keeper.

Dr. Benjamin Rush

At the turn of the nineteenth century, several pebbles seemed to drop into the then still pond of lunacy. As in all still water, they made ever widening circles, while the frontiers of medical knowledge were pushed back in Philadelphia. Dr. Benjamin Rush entered the service of the hospital in 1783, and his philosophical mind was immediately attracted toward the practical study of insanity. The cells in the partly submerged lower story were alternately cold and damp or hot and humid. Numerically, the sick in mind nearly equalled the physically sick. Dr. Rush was concerned.

Dr. Rush's concern centered on the insane. He made many suggestions for their health and comfort, and his voluminous writings were respected in his day as they are honored in ours. He was the first American to leave a mark on the studies of the human mind. His treatment must be considered quaint to say the least: (1) bloodletting; (2) a "gyrator", or revolving machine, to be used in "torpid madness", which sent the blood to the head and accelerated the heart beat, and (3) his "tranquilizer", a chair in which the opposite effect was produced. A low diet, purges, emetics, cold baths and showers were also

* Section on Medical History, The College of Physicians of Philadelphia, 7 March 1967.

Fig. 1. Benjamin Hornor Coates, M.D. From the original in the possession of the Library of The College of Physicians of Philadelphia.

prescribed. Always the hospital had treated its patients with kindness and their derangements as diseases which would respond to treatment. Such had not been the case elsewhere. It was not until the 1790's that insanity was considered in this light abroad: in 1792 by William Tuke at the York Retreat in England, and at about the same time in France by Pinel, who first struck off the chains of maniacs and abolished the abuses which existed in the asylums there. Yet, here insanity had always been considered subject to treatment just as any other disease.

Samuel Coates

Working unobtrusively in the field was another Philadelphian, a layman, no less. He was Samuel Coates, administrator of the Pennsylvania Hospital. He joined the Board of Managers in 1785 and became so interested in the operation of the young and struggling institution as well as its individual patients that he soon gave up his own successful shipping business in order to devote full time to humanitarian work. The hospital was in a ruinous state after its occupation by soldiers during the Revolution, its finances precarious due to the collapse of

paper currency. Its services were put to a further test by the yellow fever epidemic of 1793. During the more than forty years of Mr. Coates' association, the hospital prospered and developed. Not only did Samuel Coates bring a healthy business administration to the hospital for which he sought and received donations of both money and goods, but he encouraged new ideas in the days before research was generally recognized as such. He himself studied, recorded and evaluated case histories which he considered interesting. These notes were handed down to one of his sons and are now owned by the Pennsylvania Hospital. They detail the effects of nursing care, confinement, medication and what he called "nervines" on deranged patients. This was an extraordinary duty for a hospital manager, but Samuel Coates was a thoughtful, humane man, and he sought to find relief for the agonized suffering and twisted mentality of the patients in the hospital. He recorded their response to the regularity of institutional life, to the relief from their family or worldly pressures, and to medications, and finally to the cure which now and then was followed by the patient's discharge. Mr. Coates' efforts constituted another pebble and caused other ripples.

The Coates family was typical of the best of the old Quaker families. It was close knit by reason of custom which brought children, parents, and relatives together often under one roof—children learning from parents, elders benefitting from traditions and patriarchal council. Mr. Coates' family circle was a particularly happy one. There was the young and vivacious wife, Amy Hornor, whose relatives included the talented young poet, William Clifton. Two of their sons, John Reynell Coates and Benjamin Hornor Coates became physicians.

Benjamin Coates

Benjamin Coates was born in 1797 and lived an interesting, useful life in Philadelphia for the next eighty-four years (2). There were frequent holiday visits to his uncle, Joseph Hornor, at Kirkwood near Princeton, and to another relative, Henry Clifton, at Fair View above Trenton. No one knew better the dangers of the yellow fever than Samuel Coates and his friend and family physician, Dr. Benjamin Rush. At the slightest threat of the dreaded disease, summer after summer, Sam sent his young family off to loving relatives. Sam stayed on unselfishly to work for the relief of suffering patients in sultry Philadelphia, a city often torn by pestilence. The hospital itself was usually taxed to limits during these trying times. The exchange of letters in these periods of separation show the family affection and glimpses of the development of the precocious child.

Before he was nine years old, Ben had sufficient proficiency to write a letter to one of his masters in creditable Latin. All his life he gloried in an unusually clear hand which he had learned from one of Philadelphia's famous writing masters, William Thomson. For several years Ben attended Enoch Lewis's School at New Garden, then prepared for the University at the Friend's Grammar School in Philadelphia. From 1811 to 1819, he was a resident medical student at the Pennsylvania Hospital under the preceptorship of Dr. Philip Syng Physick. Meanwhile, Benjamin matriculated at the University of Pennsylvania, from which he received his degree in medicine with the class of 1818.

On the 6th day of the 2nd month, 1815, Benjamin was asked to make a list of all the poor patients now in the hospital with the date of the admission of each. His father had gone to Harrisburg to persuade the legislature to make funds available to the hospital. The protracted stay of many indigent patients was a strain on its resources. Ben thus helped his father secure state funds for the institution they were both to foster for so long.

His was a brilliant group of teachers and associates, whose names will be remembered forever in the annals of Philadelphia medicine. These were still the days of Rush, Physick, and Wistar. Following apprenticeship, Ben established general practice from his old family residence at Front and Walnut Streets. He was closely associated with his father's old friend, Dr. Benjamin Rush, not only in medical affairs, but particularly in the Anti-Slavery Society. His progress in the profession and among the institutions of the city was immediate. In 1822, Dr. Physick was asked his opinion of the professional qualifications of the young Dr. Coates, who wished to be appointed one of the physicians of the Alms House. The elder statesman of medicine wrote of the young physician, then a mere twenty-five years of age, that he was "a Gentleman of exceptional Character, and that his scientific and professional acquisitions place him in the first rank among Physicians". He became Attending Physician in 1828 and later Clinical Lecturer at the Pennsylvania Hospital where he was associated until 1841. In 1824, he was elected to the American Philosophical Society and served on many of its committees. He attended many delightful Wistar Parties, where the brightest minds of the scientific world met distinguished visitors.

Dr. Coates' writings (3) found their way into print and he served in the capacity of editor on Chapman's North American Medical and Surgical Journal, the Philadelphia Journal of Medical and Physical Sciences. He was impelled to do writing and research of his own. His field of interest was broad: medicine, ethics, phrenology, anthropology, temperance, minorities (Negroes and Indians), prison reform, American history, and genealogy—all received his attention. The earliest publication was his own graduate thesis, an essay on "Blisters". Following intensive research with a team of associates, he published with J. O'B. Lawrence, in February 1823, "An Account of Some Further Experiments to Determine the Absorbing Power of the Veins and Lymphatics". From the credits given, it was indeed a formidable team. Coates said this was a "Continuation of the Experiments which were made last year for the Academy of Medicine of this City. . . . The committee having been dissolved, we concluded to continue on inquiries in a private capacity". He and Dr. Lawrence recognized the "very liberal assistance" from Professor Chapman and occasional assistance of several gentlemen: Dr. Adam Seybert, Dr. William E. Hornor, Professor John M. Keating, Dr. Samuel Jackson, Isaiah Lukens, Clement Biddle, Henry Seybert and William Dick, Jr. Coates explained, "We have commenced by making a few further trials with colored substances, and the general weight of evidence in these cases is strongly in favor of the principal in having taken place through the vein portarium." Also they sought to determine the effect of a chemical change in the lung vessels with poisonous substances.

Interest in the Insane

The insane department at the Pennsylvania Hospital was taxing the accommodations of the original building at 8th and Pine. For some years the Managers tried to ease the strain, but an extra building was not enough. Another site had to be found, preferably a quiet, retired one. Finally, a farm of more than 100 acres on the Haverford Road was selected. Dr. Coates was concerned as to the best plan for the care of the insane. He wrote concerning his ideas. Generally, he felt there were eight distinct classes of patients: some gentle and harmless, others violent and dangerous. He favored the cottage system, or separate buildings for different types of patients. Others wanted a grand imposing main building. William Strickland, who worked in the classical manner (such as the Greek Revival Second Bank of the United States)

was a good friend of Dr. Coates, and, although he was favored, the final design of Isaac Holden was chosen. The matter was one of controversy until resolved by the Managers. Dr. Coates' village was overruled. Then he urged that no additions be made to the central Holden building, but rather that separate structures be built as needed.

On June 22, 1836, when the corner stone was laid, it was Dr. Coates' honor to deliver the address. Dr. Kirkbride considered it "able and eloquent". It is quoted at length in Morton's *History of the Pennsylvania Hospital*.

Like his father, Dr. Coates often directed his attention to the treatment of insanity. Even as a student, Coates kept notes on deranged hospital patients. Among his papers in the Carson Collection, are his *Case Books* (1) for the period of 1820 to 1834. They form a solid body for historical study. He compiled a list of "Insane Pay Patients Remaining in the Pennsylvania Hospital 10 month, 17, 1833", commencing with one woman committed in 1790 by Dr. Rush and Joseph Paschall, who promised to pay 15 shillings each week for her support and was presumably still doing so forty-three years later. Others with prominent names, as well as "Catherine F., the old Hessian", had lingered in the department. Altogether, over four thousand patients had been treated in the old building on 8th Street.

In 1833 and 1834 Dr. Coates wrote his findings on the use of opium as a medication. Narcotics and other known "nervines" were considered unsuccessful in the treatment of insanity. The only physical means he considered promising a satisfactory result were the various modes of simple and revulsive depletion. It was generally believed that insanity was a malady closely connected with inflammation of the brain or meninges. The doctors tried to keep the irritated organ at rest by silence, monotony and regular habits, and to focus the patient's attention on objects foreign to his delirium. Dr. Coates remembered he had witnessed two remarkable cases treated in the hospital by the late Dr. Dorsey, attended in consultation by Dr. Physick. Opium had effected sudden and rapid recovery of the patients. Dr. Coates tried it again to quiet the mental state of his patients. His *Case Books* recorded the symptoms, treatment and results.

In 1836, Dr. Coates was called upon to compile instructions for the Medical Department of the Exploring Expedition which Charles Wilkes was to lead around the world. The United States government asked the Academy of Natural Sciences to set the guide lines. Dr. Coates was the qualified physician chosen to write the report. His interest in the hydrometer is shown in his writings as early as January 9, 1826.

Another study, based on cases he treated in the Philadelphia prisons, was entitled, "On the Effect of Secluded and Gloomy Imprisonment on Individuals of the African Variety of Mankind in the Production of Disease." This was read at the Centennial Anniversary of the American Philosophical Society on May 29, 1843.

Dr. Coates' influence and interest was felt in many directions: medical, historical, humanitarian. His was a busy, useful life which ended October 16, 1881.

REFERENCES

1. Morton, T. G.: *The History of the Pennsylvania Hospital, 1751–1895*. Times Printing House, Philadelphia, 1897.
2. Levick, J. J.: Benjamin Hornor Coates, M. D. The Pennsylvania Magazine of History and Biography, Vol. VI. Philadelphia, 1882.
3. Coates, B. H.: Medical and Family Papers. Historical Society of Pennsylvania Manuscript Department.
4. Coates, B. H.: Papers. Carson Collection: Case Books, c. 1820–34; Cases of Insanity treated by Opium, 1834; List of Patients remaining in the Pennsylvania Hospital, 10mo 27, 1838; Note Books, Insanity II, III and IV; Thoughts on

the Construction of a New Lunatic Asylum; Experiments on Absorption in 2nd Course, probably 1823; Introductory Course, School of Medicine; Correct Copy of my report to Academy Nat. Sc's of Instructions for Medical Department of Exploring Expedition; Hydrometer (beginning), Phil. Jan. 9, '26; Prospectus Observations in Pathological Anatomy, being an account of a large number of dissections by the late J. O'B. Lawrence, M.D., Prepared for publication by Richard Harlan; Letter 7mo 5, 1842, to William G. Malin.

The College of Physicians of Philadelphia[1]

By FRANCIS C. WOOD[2]

IN 1853 a young Englishwoman of gentle birth followed an unexpected course. She decided to devote her life to nursing. On November 1, 1854, she and 38 women arrived in Scutari and took charge of the large "barrack hospital" just in time to receive the wounded from the "charge of the light brigade." A few days later 600 more patients arrived from the battle of Inkerman.

The Crimean War was being directed by ancient generals, some of whom were in their dotage, who had not seen action since Napoleon was defeated at Waterloo, 40 years before. If you have ever served in the military during a war, you have experienced many "confusions," but nothing like those existing in the Crimea in 1854. The British and French were fighting the Russians, but the British commander, one of Wellington's officers at Waterloo, had difficulty with "recent recall" and kept referring to the enemy as "the French."

In the 1950's I was asked to talk to the student nurses of the Hospital of the University of Pennsylvania at their "capping exercises" in Alumni Hall, and I was looking for some means of capturing their attention. In the Mütter Museum of The College of Physicians of Philadelphia I found Florence Nightingale's sewing kit! The one she had used in Scutari.

* * *

In 1893 when a financial panic threatened this country, President Grover Cleveland's physician found a fairly large ulcer on his patient's hard palate on the right side. It looked like a malignancy. After some careful planning, Cleveland was taken aboard a yacht in New York with two surgeons, an internist, an anesthetist, a dentist and supporting cast. The right upper jaw was removed and a prosthesis was fitted. It was all kept a deep secret. The President recovered and was able to appear at a joint meeting of Congress a month later, as if nothing had happened, and the panic was averted. One of the surgeons on that yacht was W. W. Keen. The entire episode (and a subsequent less serious operation) is recorded in his account of "The Operations on President Cleveland" which you will find in the Library of The College of Physicians of Philadelphia. The right upper jaw with several teeth, and the retractor Keen used, are in its Mütter Museum.

* * *

On July 24, 1764, a fledgling Philadelphia physician of 29 years visited a famous old man of 82 years in Padua. John Morgan noted that Morgagni "reads without spectacles and is alert as a man of fifty." Morgan displayed a specimen of a kidney which he had injected at Paris and had corroded, showing the blood vessels. These two men seem to have enjoyed each other. When Morgan left, Morgagni "claimed kindred with him from the resemblance of their names" and presented him with three volumes of *De Sedibus et Causis Morborum*, inscribed on a flyleaf in his own hand, "*Alfino suo, medico praeclarissimo Joani Morgan, donat Auctor.*" The College of Physicians Library was started in 1789 by a gift of 25 volumes from John Morgan, one of its founders. Morgagni's volumes mentioned above now reside in

[1] Reprinted by permission of *Medical Affairs*, published by the University of Pennsylvania, Philadelphia, Pennsylvania 19104.

[2] President, The College of Physicians of Philadelphia.

FIG. 1. Francis C. Wood, M.D., President of The College of Physicians of Philadelphia, Professor of Medicine of the School of Medicine of the University of Pennsylvania and former chairman of the University's Department of Medicine, a post he held from 1947 to 1965.

this library in its group of rare and cherished books.

* * *

The College was founded in 1787, its first meeting being held on January 2nd. Its founding members were John Redman, John Jones, William Shippen, Jr., Benjamin Rush, Samuel Duffield, James Hutchinson, Abraham Chovet, John Morgan, Adam Kuhn, Gerardus Clarkson, Thomas Parke, George Glentworth and 13 Junior Fellows. You will note that the names of the first faculty of the Medical School of the University of Pennsylvania are in the group. Moreover, for its first five years, it was housed in one of the early buildings of the Academy of Philadelphia (the future University of Pennsylvania) at Fourth and Arch Streets.

In its early days it was the only medical society in the area, and its objectives, as stated in the Constitution were, "To advance the science of medicine, and thereby lessen human misery by investigating the diseases and remedies which are peculiar to our country, by observing the effects of different seasons, climates, and situations upon the human body, by recording the changes that are produced in diseases by the progress of agriculture, arts, population, and manners, by searching for medicines in our woods, waters, and the bowels of the Earth, by enlarging our avenues of knowledge from the discoveries and publications of foreign countries; by appointing stated times for Literary Discourse and communications, and by cultivating order and uniformity in the practice of physic."

The College was called upon repeatedly, especially during the epidemics of yellow fever, to give advice on matters of public health and public welfare. Governor Mifflin on September 20, 1799, asked the opinion of the College as to whether it was safe to hold an election in Philadelphia at that time. John Redman, the President, replied that it was not safe to hold the election at the Commissioners Hall in Southwark, but that the Town Hall in the Northern Liberties "will be safe."

The College intervened when a murderer, about to be executed, was found by them to be insane, and stayed the execution. It helped to establish the Board of Health of Philadelphia along sound lines; it fought a number of battles to have physicians appointed to the Board and to exclude merchants who would vote against quarantining the Port of Philadelphia, when this was necessary, because the quarantine would hurt their business. Members of the College were instrumental in the preparation of the Pharmacopoeia of the United States and in continuing its revision through the years.

As time went on in the 1840's, the American Medical Association was formed. Then organized medicine and governmental agencies took over most of the responsibility for the public welfare. Yet, the College is still involved from time to time. A few years ago, at the request of the City Medical Examiner, the College's President—Jonathan E. Rhoads—appointed a

Fig. 2. The Mütter Museum of The College of Physicians of Philadelphia

"committee to advise the Medical Examiner," who was facing certain problems in his relations to the proper practice of medicine and needed support and help.

When the German sedative thalidomide was shown to produce fetal abnormalities, the Food and Drug Administration was subjected to enormous pressure to adopt a regulatory posture that would have been a serious obstacle to the introduction of new drugs into medical practice. Such knotty problems as initial use of new drugs in humans, patient consent, extended clinical trial, hazards of drug use in hospitals, and drug advertising needed sensible, authoritative medical scientific opinion, articulately stated. The need was urgent. To meet this challenge, The College of Physicians of Philadelphia, under President Thomas M. Durant, sponsored the "Greater Philadelphia Committee for Medical-Pharmaceutical Sciences," a group of top scientists and administrators from both academic institutions and the drug industry. This Committee took the lead in developing a technique (later duplicated in Chicago for the mid-west) to cope with these complex problems of such importance to health and welfare. In course of time, reasoned positions were effectively presented to all levels of government as well as to professional groups.

The value of the College in these matters is based on the fact that its membership (now approximately 1,100) provides a common meeting ground for all the medical schools, hospitals, and leaders of the profession in this area. The importance of this "all-Philadelphia flavor" is being demonstrated again right now, when it has become essential to develop a regional medical library in this area, related to the National Library of Medicine in Washington, D.C., to channel library services and requests for medical information up the line to the National Library, and down the

line to all the other medical libraries in this area.

Foreseeing this necessity in 1961, John H. Gibbon, Jr., who was President of the College, appointed a Regional Medical Library Committee which has united the medical library interests of this entire area. This group is making extensive plans for the future. The College is in the process of setting up a Visiting Committee of the best library brains in the country to help guide its developmental plans over the next few years.

The College Library is one of the great medical libraries in this country. It has 423 Incunabula, 240,883 volumes, 319,491 dissertations and unbound pamphlets, and 27,000 photographs. It sent out, last year, 27,359 volumes to 300 different libraries in 33 states.

Mr. Elliott H. Morse, its Librarian, Dr. W. B. McDaniel, the Curator of its Historical Collection, and their associates can lay their hands on almost any medical reference which a physician, teacher, medical student, or other interested person might need in almost any circumstance; or know where to find the occasional document not in their possession. Its reading rooms are spacious and beautiful, and you are welcome to use them.

The College of Physicians, its Library, its Mütter Museum, and its collection of pictures is one of the great heritages of Philadelphia and the nation. You will enjoy a visit to its building on 22nd Street between Market and Chestnut. We hope such a visit will stir your interest and enthusiasm about the past when you see Edward Jenner's inkstand and a lock of his hair, Benjamin Rush's watch and shoe buckle, Louis Pasteur's model of a tartaric acid crystal which he made and used in teaching, Marie Curie's gift of the "Quartz-piezo-electric," an instrument used by her husband, Pierre, to study radioactivity shortly after its discovery, Joseph Lister's carbolic acid spray from the early days of his antiseptic surgery, the bladder calculi removed from Chief Justice John Marshall by Philip Syng Physick, the skeleton of the seven-foot six-inch giant, a set of Perkins' Tractors, and the model of the original Siamese Twins (Fellows of the College were involved in their necropsy).

The College of Physicians, through a number of endowed lectureship funds, invites outstanding individuals to come and deliver medical lectures on the first Wednesday of the month at 5:30 p.m. in Mitchell Hall. In addition, a number of "special sections" hold their scientific meetings in the halls of the College. Its lecture halls are available to medical groups which are not sections of the College.

The College was going along quite serenely, keeping its head well above financial waters with the income from its endowment and the dues from members, until after the Second World War. The Library budget was $38,639 a year and it was receiving 1,200 journals. Then, the scientific information explosion began and it has continued. Now, the library has a budget of $220,000 a year and receives 3,171 journals.

In order to keep up with this demand, the fellowship dues have been tripled. Yet, the necessity for a yearly increase in the financial support of the library is getting beyond our capabilities. Moreover, this new mass of medical information demands the development of new methods for its handling. Thus, in addition to having an illustrious history and a wonderful heritage, we have the good fortune to have some immediate problems to solve. Goethe's statement seems applicable at this moment: "What you have inherited from your father, you must earn before you can possess it."

In concluding this discussion, it seems appropriate to stop thinking about matters of immediate urgency and to quote the toast of Dr. John Redman, the first President of The College of Physicians of Phil-

adelphia: "The dignity and success of the healing art; and long health, competent wealth, and exquisite happiness to the individual practitioner, who makes the health and comfort and happiness of his fellow mortals one of the chief ends and delights of his life, and acts therein from motives that render him superior to all the difficulties he may encounter in the pursuit thereof."

Memoir of Josephus Tucker Ullom 1877–1965*

By WILLIAM U. McCLENAHAN, M.D.

By chance, two boys enlisted in the Union Army from neighboring towns in Ohio: Andrew Ullom, 19 years of age, and James McClenahan, 26 years of age. Also by chance, they were infantrymen in the same brigade and fought together in the well-known battles of Chickamauga and Chattanooga. By chance, the son of the former graduated from the University of Pennsylvania Medical School in 1901 and the grandson of the latter from the same medical school in 1925. By chance, both doctors settled in the same Philadelphia suburb, engaged in the same type of general medical practice, were on the staff of the same hospital—Chestnut Hill Hospital—and have rendered to date a total of 101 years of service to their community. By chance, the President of The College asked the junior of the two physicians to write his senior's memoir.

* * *

Dr. Josephus Tucker Ullom was born in Athens, Ohio, on October 4, 1877. He grew up in this small town and received the degree of B.A. in 1898 from Ohio University, the local institution of learning which honored him with the degree of M.A. in 1915. In 1901, he was graduated from the School of Medicine of the University of Pennsylvania. Although qualified for internship in the Hospital of the University of Pennsylvania, he elected to serve a 15-month assistantship to Dr. Radcliffe Cheston in Chestnut Hill prior to establishing his own office on Carpenter Lane, Mt. Airy, in 1903. He was on the staff of the Henry Phipps Institute from 1903–13 and an instructor in the Tuberculosis Department of the Philadelphia General Hospital from 1904–07. In 1907, he became one of the attending physicians of the Chestnut Hill Hospital. He was chief of the medical service, and he was also president of the staff for two years. In 1929, at the age of 52, he took a course in cardiology at the Graduate School of Medicine of the University of Pennsylvania and founded the Department of Cardiology at Chestnut Hill Hospital. He was a former president of the North West Branch of the Philadelphia County Medical Society as well as a member of the Board of Directors of the same Society. He belonged to the Medical Society of the State of Pennsylvania and the A.M.A. He was a Fellow of the American College of Physicians and of The College of Physicians of Philadelphia. He was a Diplomate of the American Board of Internal Medicine. He has a list of twelve papers to his credit, beginning with "A Case of Status Lymphaticus" in association with Dr. John H. Musser in *Medicine* in 1904 and ending with "Coronary Thrombosis—With and Without the Aid of Electrocardiogram", published in *Medical Times* in 1939.

On October 15, 1908, he married Selina Patterson Hughes, who died in 1957. Surviving him are four daughters and twelve grandchildren. As is true, and not always properly recognized, Dr. Ullom owed much of his success to his wife's support, to her interest in his practice, her unusual tact and patience, and her soft, kindly voice answering endless phone calls at all hours.

* Read before The College of Physicians of Philadelphia, 1 March 1967. Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

It would be a mistake to end this memoir as a mere recital of facts, for that would be to leave an incomplete picture of a remarkable individual. Let me state briefly those qualities of Dr. Ullom's character and personality which his Chestnut Hill patients and colleagues appreciated, cherish and frequently mention. Always well and neatly dressed, he moved and spoke slowly and with dignity, following strictly every rule of social and professional etiquette. The "oak of Athens", Ohio, had a definite Harley Street, London, polish. As a general practitioner in a suburban area of Philadelphia, he kept in close contact with the masters of his profession in the city. He knew when to call for help, and without hesitation he chose the best consultants. He particularly respected the counsel of Dr. David Riesman and Dr. Alfred Stengel. Coupled with, and equal to, his abiding love for his profession, was his love for mankind. Days and nights of ceaseless toil and unselfish devotion to the sick were given freely without concern for economics, personal comfort or malpractice suits. In January 1934, he was operated on with complete success by Dr. Charles Frazier for a chronic bilateral subdural hematoma resulting from a fall on the ice twenty-five days previously.

As he aged, his deafness increased and he required more efficient hearing aids. Cataracts developed; fenders crumpled on his beloved Chrysler, and surgery came to the rescue. His lenses became thicker, but he registered complaints only when a chauffeur became necessary. Endowed with a priceless sense of humour and a remarkable gift for story-telling, he made his rounds unhurriedly. He took vacations reluctantly, except during the fall trotting races at Goshen, New York. He was always present at the Hambletonian, the climax of the harness-racing season. His ability to trace the pedigree and give the record and times of races won by practically every champion trotter in the past fifty years was equal to his knowledge of the genealogy and achievements of hundreds of individuals in the Chestnut Hill-Mt. Airy area. After completing a full day's work, he died in his sleep at 88 years of age, November 12, 1965. He combined to an unusual degree the qualities of the general practitioner of the 19th Century and the practitioner of scientific medicine in the 20th Century.

With full recognition of the scientific complexity of our profession and appreciation of how impossible it has become for one person to understand even a fraction of current knowledge, and with full respect for the specialist of today, I feel certain, nonetheless, that Dr. Ullom would join me tonight in a plea for more and more physicians to enter the field of general practice that he so nobly pursued.

Memoir of Robert Spencer Stone 1895–1966*

By EUGENE C. PENDERGRASS, M.D.

ROBERT SPENCER STONE, M.D., was born in Chatham, Ontario, in 1895. He entered the University of Toronto in 1913, but his studies were interrupted by World War I. In 1916, he went to Europe with the Canadian Expeditionary Forces. He was wounded in action, returned to Canada in 1917, resumed his studies at the University of Toronto, and received a bachelor's degree in biology and physics in 1919. He worked as an assistant in anatomy at the Peking Union Medical School in China for a year, returning to Toronto in 1921 for work on a master's degree in neuroanatomy, which he received in 1922. Subsequently, he entered the Medical School at Toronto and was graduated in 1924.

Very soon, Dr. Stone became interested in radiology, migrated to Grace Hospital in Detroit and trained with Dr. Rollin Stevens. In 1928, he became an instructor in radiology at the University of California Medical Center, working with Dr. Howard Ruggles.

Dr. Stone in due time succeeded Dr. Ruggles and was made Professor of Radiology at the University of California, and the Department was created as a separate division under his chairmanship. He attracted good associates and many young trainees. He and his staff developed a great program that received acclaim throughout the world.

Dr. Stone made many contributions to radiology, but his explorations with megavoltage x-rays, neutron radiation in the treatment of cancer, and his observations on 70 million-volt x-rays were basic. His observations became a good platform for others to consider and one on which to proceed with other explorations.

Dr. Stone became an important member of the team in the Manhattan Project. His contributions served the United States well.

Dr. Stone was a member of many important national societies, serving in many capacities as chairman or member of committees, or as its officer.

He gave important lectures before radiologic societies and learned bodies. He received gold medals from the American Cancer Society, the American Radium Society, the Radiological Society of North America, and the Medal of Merit from the President of the United States for his work with the Manhattan Project.

In 1924 Bob Stone married Willena Crawford. They had three children. They were a happy family and Mrs. Stone had the wonderful faculty of complementing Bob's attainments and gracing his home with charm and affection. She, too, is a leader.

Bob died on December 18, 1966. His was a full life. The world is better because of him. The College of Physicians of Philadelphia honored itself and Bob Stone by electing him to Honorary Fellowship on January 8, 1947. Others will take his place in the Vineyards of Science and Medicine.

Those who do will serve well.

* Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

Memoir of Irvin Elmer Deibert 1893–1967*

By HAROLD D. BARNSHAW, SR., A.B., M.D.

IRVIN E. DEIBERT, a member of The College of Physicians of Philadelphia from 1935, died at his Florida home on January 5, 1967.

Dr. Deibert was born September 19, 1893. His high school education was obtained in Haddon Heights, New Jersey, his premedical education at Temple University, and his professional training at Jefferson Medical College, where he was graduated in the class of 1917. He served in the First World War as a first lieutenant for one year and then interned at the Cooper Hospital, Camden, New Jersey. While doing general practice, he studied surgery at the New York Postgraduate Hospital. Dr. Deibert was past president of the Camden County Medical Society, Society of New Jersey Surgeons and the Board of Managers of the Camden County Lakeland Hospital. He was also a member of the American Medical Association, The College of Physicians of Philadelphia, the Philadelphia Academy of Surgery and the American College of Surgeons. He was chairman of the Surgery Department at the Cooper Hospital from 1941 to 1953 and at one time chief of surgery at the Zurbrugg and Lakeland Hospitals. He was a member of the Founders Group and a Diplomate of the American Board of Surgery. In 1958, he was honored by being selected by the Philadelphia Academy of Surgery to give the annual oration; his subject was Intestinal Obstruction. He was a member of the racquet club.

* Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

Like all great men, "Deib", as he was fondly known by his friends, was more than degrees and honors. His personality, surgical skill and love of his patients and friends set him above the ordinary. Dr. Deibert had been a general practitioner for a few years and this gave him a depth of understanding of his patients that he was to carry with him throughout his medical career. He was an excellent surgeon. His diagnostic ability was outstanding and his surgical skill was admired by all. Early in his career he collaborated with other surgeons, usually of another specialty, in operating on serious cases. His companion in this field was often B. Franklin Buzby, an orthopedic surgeon. Together they performed surgical feats that would have been hard to do separately. He was a chest surgeon of renown, performing many successful surgical operations at the Lakeland Hospital at great sacrifice to himself.

Dr. Deibert always loved boats and fishing. He had several schooners on the Barnegat, and later in life he continued this sport from his home on the Keys in Florida. His door was always open to his friends and many visited him at this retreat.

His spiritual life was interesting. He was born an Episcopalian and was closely related to the church. He studied deeply the laws and beliefs of the Episcopalian Church and with this study he became closer to the Catholic Church. During his later years he embraced the Catholic faith.

Dr. Deibert was a devoted family man. He married Elizabeth Dunlap in 1921 and there are three living children, Jean, Ann and Irvin, from this marriage. His wife

died after a long illness. In 1961, he married Harriet Reinert, who gave him devoted care during the last years of his life when he suffered from a chronic illness.

Dr. Deibert was always helpful to young physicians and made many sacrifices to help them. He was surrounded by devoted friends and family, and these and his many admiring patients will keep alive his memory.

TRANSACTIONS

of the

Philadelphia Neurological Society

1966-67

OFFICERS 1967

President
DANIEL SILVERMAN, M.D.

1st Vice-president
PHILIP GORDY, M.D.

2nd Vice-president
CHARLES KENNEDY, M.D.

Secretary
LAWRENCE C. MCHENRY, JR., M.D.

Treasurer
MARTIN MANDEL, M.D.

Editor
JULINA GYLFE, M.D.

Published by the Transactions & Studies of The College of Physicians of Philadelphia, Vol. 35, No. 2 (4th Series), October 1967.
Waverly Press, Inc.
Baltimore, Maryland 21202

Philadelphia Neurological Society

PROGRAMS 1966–67*

OCTOBER 7, 1966

Non-surgical causes of the Foster Kennedy syndrome. NORMAN J. SCHATZ, M.D.

The orthostatic hypotension syndrome of Shy-Drager: a clinicopathologic study. GABRIEL A. SCHWARZ, M.D.

Saline lobotomy in the treatment of pain. HENRY A. SHENKIN, M.D.

Hypertrophic neuritis with observations on 'onion bulb' formations and 'hyalin degeneration' in severely atrophic muscle: a histochemical and electron microscopic study. SUMNER I. ZACKS, M.D.

The orthostatic hypotension syndrome of Shy-Drager—a clinico-pathologic study.

GABRIEL A. SCHWARZ, M.D.

Two patients with a progressive neurologic disorder characterized by orthostatic hypotension, urinary difficulties, basal ganglia dysfunction, cortico-spinal tract symptoms, cerebellar incoordination, and muscle wasting and weakness leading to severe invalidism are reported.

Study of the nervous system of these patients showed a non-specific bilaterally symmetrical neuronal loss and demyelinization, often with intense astrogliosis of lumbosacral ventral horns, thoracic lateral visceral columns, inferior olivary bodies, dorsal vagal nuclei, pontocerebellar tracts and nuclei, locus coeruleus, substantia nigra, cerebellar cortex and white matter, outer pallidum and putamen.

The clinico-pathologic findings in these cases and the clinical reports of similar cases in the literature have tended to confirm the idea expressed by Shy and Drager that these cases represent a disease entity. The neuropathologic findings suggests that this illness is a progressive encephalomyelopathy of undetermined etiology.

Saline lobotomy in the treatment of pain

HENRY A. SHENKIN, M.D.

Prefrontal saline lobotomy was performed for intractable pain in twenty patients. Satisfactory results were obtained in fifteen, with a follow-up in some approaching one year (average three months). One patient died of intracerebral bleeding and two patients remained stuporous until death. Among survivors, there were only transient changes in personality and no serious psychiatric complications. Prefrontal saline lobotomy is preferred to other methods of lobotomy because it does not require special equipment and is relatively safe and effective.

Hypertrophic neuritis with observations on 'onion bulb' formations and 'hyalin degeneration' in severely atrophic muscle: a histochemical and electron microscopic study

SUMNER I. ZACKS, M.D.

Histochemical and fine structure observations in nerve and muscle biopsy specimens from a patient with "interstitial hypertrophic neuritis" of 25 years' duration is presented. "Onion bulb" lesions were not prominent in conventional histologic preparations but were readily identified in thin sections examined by phase contrast microscopy or in the electron microscope. Visibility of this lesion is attributed to the relative numbers of Schwann cell processes surrounding the centrally placed myelinated axon within the "bulb". Histochemical

* Abstracts not received by the Editor prior to 1 July 1967 are published by title only.

studies of the nerve showed little oxidative enzyme activity in either the axons or Schwann cells and lysosomal hydrolytic enzyme activity was absent. This correlated with the lack of morphologic evidence of active neuronal degeneration. The fine structures of the "bulb" lesion is described and an hypothesis is presented that indicates that they may be formed as a result of abnormal regeneration. This study confirmed the Schwann cell origin of the lamellae within the "bulb" and identifies the mucinoid material within the nerve as acid mucopolysaccharide containing collagen bundles.

Skeletal muscle showed uniform and severe "end stage" atrophy with marked reduction of myosin ATPase and absent phosphorylase and UDPG transferase activity. However, glycogen was found in the fibers, and mitochondrial SDH, DPN diaphorase activity were present. No differentiation in type I and II fibers was possible. An unusual feature which occurs only in long standing atrophy was the presence of numerous oval hyalin bodies within the atrophic muscle cells. Their proteinaceous nature was demonstrated histochemically and evidence was considered that they represent altered contractile proteins, possibly a form of myosin. Hyalin bodies are not specific for hypertrophic neuritis but occur in other forms of muscle atrophy of long duration.

NOVEMBER 4, 1966

Absence of the internal carotid artery. Richard G. Berry, M.D.

Corticosteroid response to acute cerebral injury and subarachnoid hemorrhage. William F. Bouzarth, M.D., William Feldman, Ph.D., and Henry A. Shenkin, M.D.

Electro-respiration by stimulation of the thoracic spinal cord. Jewell L. Osterholm, M.D., Tom Hooker and Jack Pyneson

Absence of the internal carotid artery

Richard G. Berry, M.D.

It is emphasized that absent component parts of the circle of Willis are rare phenomena, and those recorded should be evaluated with considerable skepticism. The present report concerns the thirteenth recorded instance of an absent internal carotid artery. This was found incidentally in a 67 year-old man. The formalin-fixed brain only was available for study.

No internal carotid artery was present on the right side; instead, there was a direct connection between basilar and middle cerebral arteries. The right posterior cerebral artery was normally formed. A large "mesencephalic artery" coursed forward to bifurcate 5 mm. from the posterior cerebral artery. Its lateral branch entered the Sylvian fissure as the middle cerebral artery. An ophthalmic artery to the ventral surface of the optic chiasm arose from this vessel, as did the right anterior cerebral artery. The mesial branch formed a dual supply to the posterior cerebral distribution.

It is postulated that obliteration of the third aortic arch occasioned compensatory hypertrophy of the vertebral and basilar primordia. Atrophy or retrogression of the internal carotid artery took place as a result of this shift, probably between Padget's third and fourth stages. It would seem that collateral circulation was well established early in the embryo, for no other evidence of congenital deformities of the brain were present.

Corticosteroid response to acute cerebral injury and subarachnoid hemorrhage

William F. Bouzarth, M.D.
William Feldman, Ph.D.
Henry A. Shenkin, M.D.

Although the general surgeon has documented the adrenocortical response to bodily injury, this has not been done for craniocerebral trauma. Since corticosteroids are frequently used as adjunctive therapy, the basic endogenous response of plasma cortisol is of importance in neurosurgical care.

Thirty-one patients presenting with severe cranial injury and minimal body trauma had plasma cortisol determinations (8 a.m. and 9 p.m.) using the Rudd fluorometric method at varying intervals during their hospitalization, especially documenting the response to neurosurgical operations. The response paralleled the severity of injury, with the highest values noted 12 hours after injury. In the next five days, the plasma cortisol decreased progressively, maintaining a diurnal variation with a higher a.m. than p.m. level. This decline occurred during a time when post-traumatic cere-

bral edema was not manifest. The adrenal cortical response to neurosurgical procedures had a direct relationship to the time interval between the original injury and surgery, being greatest in the first week and less with the passage of time.

This study indicates that the major stress of cranial trauma was the immediate injury itself and the postinjury edema offered little challenge to the stress reaction. This provides some explanation for the efficacy of pharmacologic doses of steroids in the treatment of traumatic cerebral edema.

DECEMBER 9, 1966

Encephalopathy presenting with bilateral pallidal necrosis: a clinico-pathologic report. Geraldine King, M.D., and Gabriel A. Schwarz, M.D.

Suprasellar granular cell myoblastoma. John Nernoff, III, M.D., and Richard G. Berry, M.D.

A sacculated venous structure in association with the atlanto-occipital sinus. Wesley Parke, M.D., and Marius P. Valsamis, M.D.

Encephalopathy presenting with bilateral pallidal necrosis: a clinico-pathologic report

Geraldine King, M.D.
Gabriel A. Schwarz, M.D.

A three-year-old boy developed brief episodes of stiffening of his lower limbs for 9 months. He had several generalized tonic attacks followed by inability to walk, drowsiness, anorexia, and fever. He became stuporous and had opisthotonic episodes of several minutes' duration. Laboratory studies were never abnormal, except for recurrent leucocytosis with febrile exacerbations. He finally developed myoclonic jerks, papilledema, spastic quadriplegia, and bilateral Babinski signs. Ventriculography showed increased pressure and dilated lateral ventricles. The child expired about 3½ months after admission.

Necropsy showed his liver to be normal and the copper content of his striatum to be low. There was complete necrosis of globus pallidus on both sides. There were neuronal and glial changes in the putamen and caudate nucleus bilaterally. Substantia nigra showed extensive status spongiosus. Spotty demyelinization was seen in some cranial nerves. Diffuse myelin pallor, status spongiosus, and glial changes were noted throughout the cerebral white matter and the cerebellar cortex and white matter.

From the neuropathologic findings, it was felt that this case did not fit into the well-known syndromes of basal ganglia disease. It was suggested that this case—and others similar to it—might be explained on a spectrum of vulnerability based on area capillarization and topographic chemical differences.

Suprasellar granular cell myoblastoma

John Nernoff, III, M.D.
Richard G. Berry, M.D.

The clinical and pathological features of a suprasellar neoplasm are presented as they occurred in a 33-year-old Negro male. The tumor was found at autopsy to be a primary "granular cell myoblastoma." Gradually progressive hypothalamic dysfunction first became apparent six years before death. Decreased function of adrenal cortex and gonads was associated on the basis of hypopituitarism. Six months before death bitemporal inferior quadrantopsia was present.

At autopsy a 3.5 cm. grey-yellow, solid, rubbery suprasellar neoplasm compressed the hypothalamus and anterior third ventricle. Microscopically the tumor was composed of nests and streams of large polygonal or spindle-shaped cells, with whorling but no palisading. Often the cells were oriented around thin-walled vessels. Their cytoplasm contained pale eosinophilic granules. These were of varying size, were sudanophilic, and PAS positive. No myofibrils were found. The cells resembled those of the misnamed "granular cell myoblastomas" found elsewhere in the body, but only rarely encountered as sizable tumors of the posterior hypophysis. They were identical in structure to the cells of the "tumorettes" of the infundibular region described by Shanklin. Although controversial in origin, and believed in tongue and elsewhere to arise from perineural Schwann or fibroblast cells, or to be of mesenchymal origin, the present specimen showed many cells stained with silver carbonate as metalophil cells of the reticuloendothelial system. These, then, are mesenchymal in origin.

A sacculated venous structure in association with the atlanto-occipital sinus

Wesley Parke, M.D.
Marius P. Valsamis, M.D.

A group of thin-walled saccular dilatations of a venous sinus are found in epidural connective tissue in the suboccipital region of human cadavera. These ampullae are derived from the atlanto-occipital sinus and are lodged in the acute angle formed between the dura and the vertebral artery at its point of penetration. The whole complex measures 4–5 mm across its greatest diameter and is comprised of 10–20 ampullae. The form of the individual dilatations varies from simple bulbous sacs to elongated chambers that often bear papillary extensions. The majority of the ampullae communicate directly with intricately coiled arteries derived from the vertebral artery. In sections these vessels show aggregates of epithelioid cells that are characteristic of glomerular arteriovenous anastomoses. Both the ampullae and the anastomatic arteries are surrounded by nervous plexuses that are sufficiently elaborate to justify the designation of the whole complex as a neurovascular organ. Solely on the basis of structure, it is assumed that the ampullae may be baroceptors. The function of the anastomotic arteries is not apparent.

FEBRUARY 3, 1967

Phantom spike-waves and the 14 and 6/second positive spike pattern: a consideration of their relationship. Daniel Silverman, M.D.

Gastric secretory changes following anterior hypothalamic lesions in the dog. Richard A. Davis, M.D., and Frank P. Brooks, M.D.

The effects of cervical sympathectomy on the cerebral circulation of patients with cerebrovascular disease. Henry A. Shenkin, M.D., and Paul Gutterman, M.D.

Phantom spike-waves and the 14 and 6/second positive spike pattern: a consideration of their relationship

Daniel Silverman, M.D.

The six per second spike-wave, frequently called the phantom spike-wave, has been described as a rare electrographic pattern found in patients with seizures and/or syncope. Its frequency of occurrence in general EEG laboratory populations has been reported to be under 1%. The present author has encountered this pattern much more frequently, probably as a consequence of montages and recording conditions designed to pick up 14 and 6 per second positive spike activity. In fact, this study was suggested by the discovery of phantom spike-waves in connection with the latter abnormality. This coincidence has been noted previously by Gibbs and Hughes, but an intimate relationship between the two patterns was not suggested. In order to determine whether such exists, records over the past year previously read as having 14 and 6 per second positive spiking or phantom spike-waves were reviewed, each for the presence of the other pattern. It was found that if recording conditions for 14 and 6 per second positive spiking were obtained, a high degree of coincidence existed. The differences in age, sex and incidence during wakefulness noted by other investigators (spike-waves are commoner in older patients, in females, and during wakefulness) were found to be a consequence of the maturational sequence of the 14 and 6 per second positive spike pattern. This was confirmed on a second sampling of 14 and 6 per second positive spike records out of another 2000 consecutive patients. It is concluded that the phantom spike-wave is more akin to the 14 and 6 per second spike disorder than to seizure discharges.

The effects of cervical sympathectomy on the cerebral circulation of patients with cerebrovascular disease

Henry A. Shenkin, M.D.
Paul Gutterman, M.D.

Seventy-five patients with occlusive cerebrovascular disease had serial cerebral blood flow determinations by the nitrous oxide method within a few days after admission to the hospital and 7 to 10 days later. In the interim 19 patients were given no specific treatment, 32 had superior cervical ganglionectomies carried out and 24 patients had stellate ganglionectomies performed. A goodly proportion of these patients had their cerebral circulations redetermined 3 to 4 months later. Neither the unoperated nor the superior cervical sympathectomy group showed a significant difference in

any of the cerebral hemodynamic parameters measured, at any time.

On the other hand, stellate ganglionectomy caused a distinct fall in cerebrovascular resistance and, less clearly, an increase in cerebral blood flow and cerebral oxygen consumption. The reduction in cerebrovascular resistance in the stellectomized patients was strongly correlated with the initial cerebrovascular resistance: the higher the initial cerebrovascular resistance the more likely stellate ganglionectomy would reduce this value. None of these changes, however, was sustained when remeasured after three months. Clinical follow-up of the patients revealed no immediate differences; however, on the average of two years later a more favorable outcome of the stellate ganglionectomized patients was suggested.

MARCH 3, 1967

Studies in electronystagmography—alternating nystagmus. Joseph Toglia, M.D.

Structural changes in the CNS in animals treated with hypocholesterolemic agents. Henry S. Schutta, M.D.

Microreflexes in response to somatosensory stimulation. Roger Q. Cracco, M.D., and R. G. Bickford, M.D.

Structural changes in the CNS in animals treated with hypocholesterolemic agents

Henry S. Schutta, M.D.

Twelve day old Wistar rats were given daily intraperitoneal injections of Triparanol (250 mg./kg.) in olive oil. Rats injected with olive oil served as controls. The animals were fixed by perfusion with buffered glutaraldehyde. The brain, spinal cord and the Gasserian ganglia were removed, post osmicated and embedded in Araldite for phase contrast and fine structure examination.

Phase contrast examination of tissues from animals injected with Triparanol revealed the presence of 1–2μ osmiophilic granules in the cytoplasm of ganglion cells in the cerebral cortex, spinal cord grey matter, Gasserian ganglion cells and in Purkinje cells. The number of Purkinje cells containing granules increased with the duration of injections. After 3 days some 25% contained granules, after 5 days 50% and after 12 days or more 80–90% of Purkinje cells were affected. Cell necrosis was not observed.

Samples of cerebellar cortex, spinal cord grey matter and Gasserian ganglia were examined with the electron microscope. The Purkinje cells contained cytoplasmic inclusions, which in animals injected for 3 days were crystalloid in nature. In animals injected for 5–14 days crystalloid bodies containing membranous areas were the most frequent type of inclusions seen. Purely membranous and uniformly crystalloid structures were also found. In addition amorphous osmiophilic inclusions and amorphous appearing areas in crystalloid and membranous bodies were present. Some of the crystalloid and membranous inclusions were surrounded by a limiting membrane, but in others a limiting membrane could not be identified. The mitochondria endoplasmic reticulum, and the Golgi complexes appeared normal. The changes in Gasserian ganglion cells and spinal cord neurons were similar to those found in Purkinje cells. The CNS capillary endothelium frequently contained membranous cytoplasmic inclusions.

Abnormalities in Triparanol-treated animals will be compared with the findings in animals similarly injected with Diazocholesterol and Clofibrate and the possible origin of the cytoplasmic inclusions will be discussed.

APRIL 7, 1967

Hypertrophic brachial myopathy. Elliott L. Mancall, M.D., and A. M. Hirschhorn, M.D.

Primary amyloidosis of the nervous system. Lawrence Green, M.D., and Richard G. Berry, M.D.

A band staining pattern of fluorescent tagged antimyosin. Richard M. Armstrong, M.D., and F. A. Pepe, M.D.

The treatment of dyskinesias by stereotactic dentatectomy. Nicholas T. Zervas, M.D., and Frederick A. Horner, M.D.

Percutaneous cervical cordotomy. Philip L. Gildenberg, M.D., Paul M. Lin, M.D., and Pedro P. Polakoff, M.D.

Primary amyloidosis of the nervous system

Lawrence Green, M.D.
Richard G. Berry, M.D.

This report has three objectives: 1. To call attention to the characteristic clinical picture of nonfamilial amyloid neuropathy; 2. To emphasize the efficacy of rectal biopsy as a convenient safe means of obtaining peripheral nerve and ganglia for diagnosis of this and other neurologic illnesses; 3. To stress the importance of alkaline Congo red and thioflavine T staining methods used in conjunction with the polarizing lens and fluorescent microscopy for definitive and accurate identification of amyloid.

A 50-year-old Negro-American Indian male developed symptoms of a distal polyneuropathy in 1962. The illness progressed over the next four years to involve the cardiovascular, gastrointestinal and autonomic nervous systems. He expired in 1966 after a long course of supportive therapy.

Laboratory studies were elaborate, extensive, and unrevealing, save for a persistently elevated cerebrospinal fluid protein and nonspecific EKG changes. Several biopsies, however, revealed the presence of amyloid in the peripheral and autonomic nerves when stained by alkaline Congo red and thioflavine T. Autopsy confirmed this diagnosis and displayed amyloid infiltration of practically all systemic organs, peripheral nervous system, dorsal root ganglia, and dura with remarkable sparing of the central nervous system. There was no evidence of multiple myeloma.

A band staining pattern of fluorescent tagged antimyosin

Richard M. Armstrong, M.D.
F. A. Pepe, M.D.

Fluorescent tagged antibody to myosin of chicken and human skeletal muscle has been used to stain muscle fibrils of these two species. Two types of reactions are identified: a species specific and an interspecies reaction. The details of the human species specific staining are compared to the previously described staining in chicken muscle.

The treatment of dyskinesias by stereotactic dentatectomy

Nicholas T. Zervas, M.D.
Frederick A. Horner, M.D.

Four patients with advanced parkinsonian rigidity underwent ipsilateral stereotaxic ablation of the dentate nucleus of the cerebellum. Anatomic localization was provided by serial sections of cadaver specimens* in both the sagittal and coronal plane which permitted a correlation of the deep cerebellar nucleus with the fourth ventricle. At the time of operation an air encephalogram of the fourth ventricle was performed to obtain the proper reference points. Through a twist drill hole in the suboccipital squama a depth recording electrode was inserted into the depths of the cerebellum. Penetration of the dentate nucleus was marked by significant increase in electrical activity. The recording electrode was replaced with a radiofrequency electrode (2.0 mm OD) and a destructive heat lesion (75°C-60 sec.) was produced across the length of the dentate nucleus.

Post-operative examination revealed no evidence of cerebellar ataxia, although two patients had some unsteadiness in walking for a few days. A significant reduction in rigidity was observed in three of the four patients. In two of the former cases, increased utilization of the hand and significant improvement in gait occurred. The procedure would appear to be of value in those patients with rigidity who are not ordinarily candidates for thalamotomy because of severe bradykinesia or intellectual or psychological impairment.

* The histologic specimens were prepared by Dr. Elliott Mancall.

Percutaneous cervical cordotomy

Philip L. Gildenberg, M.D.
Paul M. Lin, M.D.
Pedro P. Polakoff, M.D.

A new approach was devised so that a needle electrode might be inserted percutaneously into the anterolateral quadrant of the spinal cord in the lower cervical levels. The patient is placed in the supine position with the head resting on a Franklin x-ray unit. A second x-ray tube is placed so that both an AP and a lateral x-ray can be taken without moving the

patient during the procedure. The needle is inserted under local anesthesia between the carotid sheath and the tracheoesophageal complex. The anterior surface of the body of the cervical vertebra is palpated with the needle tip. When the disc is identified, the needle is inserted diagonally through the disc into the subarachnoid space. Repeated AP and lateral x-rays are taken to verify the progress of the needle. When it is in the subarachnoid space, 8–15 cc of air is injected to outline the anterior border of the spinal cord, as in a cervical myelogram.

The needle is then advanced to the target point and a stylet is inserted through the needle so that the lesion can be made. The needle is a standard 18 gauge 3" lumbar puncture needle. The stylet is a wire insulated with Teflon which protrudes 4 mm beyond the tip of the needle. Only the distal 2 mm of the stylet wire is uninsulated. Either a straight stylet is used or a stylet with a curve at the tip to direct it slightly more medial or more lateral.

Our first 140 procedures are summarized as follows: We have done 28 procedures at the C2 level. Of the 27 procedures initially performed, 4 gave unsatisfactory pain relief. One of these was repeated with satisfactory results. This gives a final result of 89% satisfactory pain relief. At the lower cervical levels, procedures were initially done for 93 sides in 67 patients. Although 68 procedures were initially satisfactory, 15 were repeated, giving a final result of 84% satisfactory pain relief. One hundred and twelve procedures had been performed at the lower cervical level at the time these results were compiled. This illustrates one of the advantages percutaneous cervical cordotomy has over open cordotomy. If the result is not initially satisfactory, or if the pain returns, it can easily be repeated. Our immediate results have been as good on repeat procedures as on initial ones.

TRANSACTIONS & STUDIES

of

The College of Physicians of Philadelphia

Volume 35 (Fourth Series)

Number 3 (January 1968)

Dr. William Rimmer and His *Art Anatomy*[1]

By FRED B. ROGERS, M.D.[2]

IN the catalogue of the Andrew Wyeth exhibition, a show widely acclaimed earlier this year, art scholar Edgar P. Richardson cited the formative role of the artist's father, N. C. Wyeth: "He made his son draw from casts and study Rimmer's *Anatomy,* drilled him to study a model, then to turn his back and draw the figure from memory." The father, in turn, had been a pupil of Howard Pyle, who had also found Rimmer's *Art Anatomy* useful for learning surface anatomy—a skill in which the elder Wyeth excelled, often not needing a model to achieve realism. These three men—Andrew Wyeth, N. C. Wyeth and Howard Pyle—followed a number of other eminent American artists who derived instruction from Dr. William Rimmer: John La Farge, William Morris Hunt, Daniel Chester French, Frederic P. Vinton and Frank W. Benson; all testify to his ability as a teacher. Indeed, the final evaluation of Dr. Rimmer's complex, courageous life is only now being made. In this process, a revised Dover paperback edition (1962) of his book, *Art Anatomy,* first published in 1877, made available again a remarkable work of art.

[1] Section on Medical History, The College of Physicians of Philadelphia, 10 October 1967.

[2] Temple University School of Medicine, Philadelphia, Pennsylvania 19140.

William Rimmer, sculptor, painter, physician, teacher and writer on art, was born on February 20, 1816, in Liverpool, England—the oldest of seven children. His father, Thomas, was an exiled member of a French noble family, and his mother, Mary, was of Irish birth. In 1818 the Rimmer family emigrated to Nova Scotia, and by 1825 had moved to Boston, Massachusetts, where William spent his boyhood. Despite financial poverty, the Rimmer household in South Boston was one of culture and learning. Thomas Rimmer educated his children as he himself had been schooled, teaching them history, music and languages, while earning his living as a cobbler.

William Rimmer showed signs of artistic ability at an early age. At fourteen he began to assist the family finances by painting miniatures and signs. He also worked briefly in a lithographic office and tried his hand at making statuettes in gypsum. On December 17, 1840, he married Mary Hazard Corey Peabody, a Quakeress from New Bedford. Of his wife, an ally in his various pursuits, Rimmer once wrote: "I know of no one whose judgment I would rather have than my wife. She can perceive to perfection the nicest points and shades of difference in my work. What can others'

FIG. 1. Dr. William Rimmer at age fifty. (From Truman H. Bartlett: *The Art Life of William Rimmer: Sculptor, Painter, and Physician,* 1882.)

praise do for me, or what make me happier than I am when she commends?"

After a tour through Norfolk and Plymouth counties as an itinerant portrait painter, Rimmer settled in Brockton where he worked as a shoemaker and began the study of medicine. A physician in the town, Dr. Abel W. Kingman, lent him books from his library and allowed him, as did other local practitioners, to assist on calls. The preceptor quizzed his preceptee twice a week to facilitate the learning process. Dr. Kingman long afterward recalled: "He impressed me more than any person I ever knew as an original mind. Our conversations concerned the powers of observation, perception, the internal recognition of things . . . He visited me several times a year, until a short time before his death. . . . and we talked all the time we were together."

In 1847 Rimmer gained access to the dissecting-rooms of the Massachusetts Medical College (later the Harvard Medical School). Here he was a pupil of the newly-appointed anatomy professor, Dr. Oliver Wendell Holmes, an able and popular teacher. Studying the structure of the human body, Rimmer realized that anatomy was the foundation of classical and neo-classical art. He annotated a recent translation of Cruveilhier's *Anatomie Descriptive* and familiarized himself with the anatomical treatises of Vesalius, Albinus, Camper, Sabattini, Fau and Gray. The Boston collections of comparative anatomy, both animal and human, gathered by Warren, Jackson and Peabody, became well-known to him.

Rimmer was described as a kindly country doctor, one who relied more on the healing power of nature than on drugs and who had success with the "cold-water" treatment of typhoid and other fevers. In 1855 he received a formal license from the Suffolk County Medical Society. Though dutiful in his practice, being especially attentive to sick and injured quarrymen and the poor, he did not appear deeply concerned with it and used medicine chiefly as a means of livelihood. Long after he had left medicine for art, he was known to his neighbors and townsfolk as *Doctor* Rimmer.

The years that Rimmer spent in medical study and practice around Brockton, Randolph, Bridgewater and Boston are dim to recall. From 1855 to 1863 he practiced medicine in the village of East Milton. During this period he began his career as a sculptor, working first in granite, later in clay and marble. Self-taught, he knew no professional artists at the time. He had little contact with the Boston of Beacon Hill or the Cambridge of Harvard University. His father, taking to drink late in life, was placed in a cottage at Concord, discreetly tended, where he died in 1852; Ralph Waldo Emerson with anonymous generosity contributed to the old man's support. There were seven Rimmer children: four sons who died young, and three daughters who grew to adulthood and were

friendly with the family of Bronson Alcott. One daughter, Caroline Hunt Rimmer (1851–1918), shared her father's artistic talents. Dr. Rimmer was also a musician and teacher of music; he played the organ at the Roman Catholic Church in Randolph and was a member of the Boston Musical Institute.

During fifteen years of medical practice in the back villages around Boston, his artistic reputation spread slowly. In 1861 he was invited to give lectures on anatomy in Boston, and in the following year joined the Boston Art Club. In 1863 he lectured at the Lowell Institute. From 1864 to 1866, his home then being in Chelsea, he conducted a private school for drawing and modelling at his studio in School Street, Boston. In 1864 his book, *Elements of Design,* appeared. A "drawing-primer" for parents and teachers, it aimed at teaching children to draw and contained an introductory note by James Elliott Cabot, Boston architect and later literary executor of Emerson. Divided into six parts, *Elements of Design* contained forty-nine steel plate illustrations and forty-two pages of text, pertaining chiefly to the human figure. (This book was reissued in 1872 and 1879.)

Rimmer's teaching skill took him beyond the Boston scene: three series of lectures at Providence, Rhode Island (1871–73), and talks at the National Academy of Design in New York, the Yale School of Fine Arts, and at the Technological School in Worcester. Invitations also came from Harvard and Vermont universities. In 1875–76 he gave a course at the Massachusetts Normal Art School in Boston.

From 1866 to 1870 Dr. Rimmer served as director and chief instructor at the School of Design for Women at the Cooper Union for the Advancement of Science and Art in New York City, admittedly his happiest years. He worked prodigiously during this tenure at a comprehensive plan for teaching art, but differences of opinion arose with the president and trustees and he resigned and returned to Boston. The force and vitality of his work during this period and for the remainder of his life made him the most creative American sculptor and art teacher of the time. His dynamic sculptures, *The Falling Gladiator* (1861), *The Dying Centaur* (1870), and *The Fighting Lions* (1870), cast in bronze after his lifetime, are now in the Metropolitan Museum of Art, New York.

When the School of the Museum of Fine Arts in Boston was started in 1877, Rimmer was asked to teach art anatomy twice a week, and he also instructed in drawing and sculpture. Some of his lectures were reported in newspapers and remain as excellent records of his provocative and stimulating method. One of his listeners, Mrs. William Aspinwall Tappan, a cultivated Bostonian, placed two thousand dollars with the treasurer of Harvard College to pay for the publication of a compendium of his lectures on artistic anatomy. Dr. Rimmer accordingly spent the summer of 1876 at Union, New Hampshire, putting on paper nearly 900 outline drawings illustrating every phase of the subject. An illuminating commentary by the artist paralleled this atlas. The text covered head and body: skeletal system, muscular and surface features of male and female, infant and child, adult and aged persons. Various facial expressions, derived from the physiognomy of Lavater and the phrenology of Spurzheim, revealed physical rest and motion, mental calm and turmoil. The *Art Anatomy,* a volume of ingenuity and beauty of draftsmanship, contained eighty-one plates, each 10 by 14 inches in size, drawn with a fine, hard gray pencil. They were printed by Little, Brown and Company of Boston in 1877, using an antique heliotype process of reproduction. The rose-colored plates on a white background did the drawings somewhat less than justice: a black-on-white style was used for the 1962 reprinting by Dover Publications of New York.

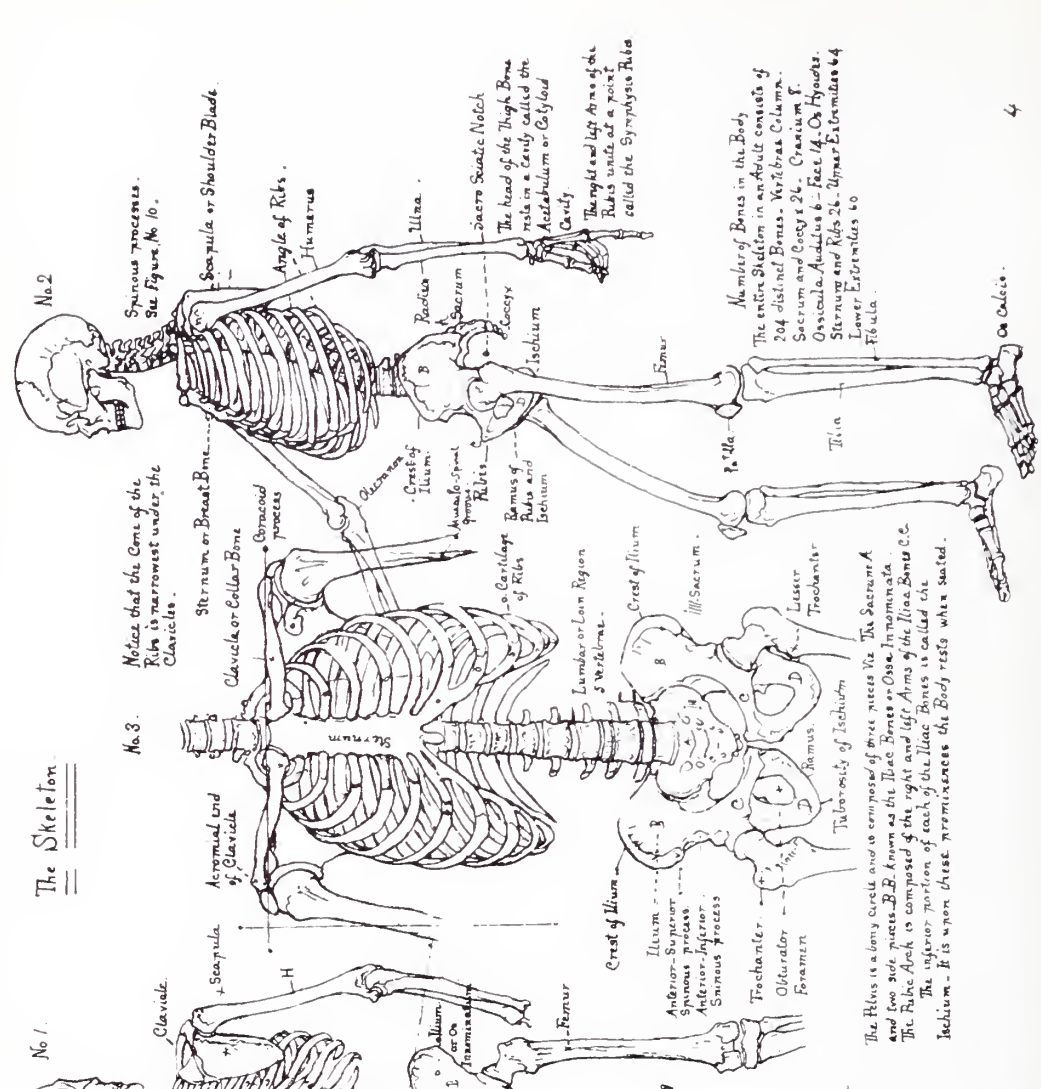


Fig. 2. Human Skeleton. (From Rimmer's *Art Anatomy*, 1884 edition. Copy given to the Library of The College of Physicians of Philadelphia by Dr. W. W. Keen in 1907.)

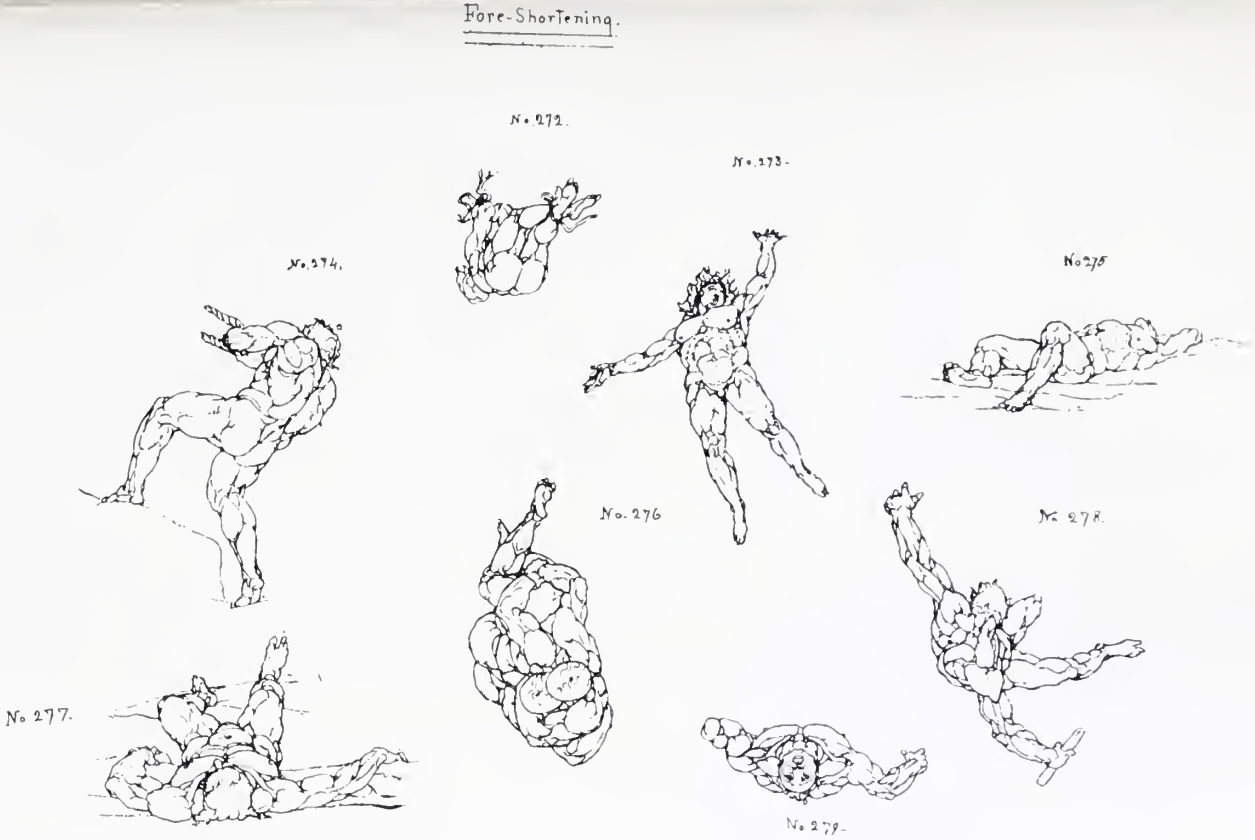


FIG. 3. *Fore-Shortening.* Study of the falling body, expressing the artist's concern with perspective and movement

Fifty copies of the original *Art Anatomy* were issued—to sell at fifty dollars each. In 1879 the plates and all unsold copies were destroyed by fire, but in 1881 new albertype (sanguine) plates were made from the author's pencil drawings; printings of this less expensive folio edition by Houghton, Mifflin Company of Boston and New York were done in 1884 (including one in London), in 1892 and 1905. The publisher's notice directed these copies, priced at nine dollars each, to "students in art and medicine". It added: "The consummate knowledge of anatomy possessed by Dr. Rimmer, and his extraordinary and most interesting power of representation, render the work valuable both to the technical student and to the lover of art."

Rimmer's goal in artistic anatomy was pedagogical. He said: "As well to set a person down to read a foreign language before he has learned the value of the letters which compose the words, as to ask a person to draw a human figure without some knowledge of the bones and muscles which compose it." His finished volume, *Art Anatomy*, however, surpassed pedagogy. Rimmer had conceived a book of art instruction; he produced a work of art in itself. Successor to William Rush and forerunner of Thomas Eakins, Robert Henri and Dr. R. Tait McKenzie, art authority Mantle Fielding (1965) has stated that, "It is . . . as a teacher that Dr. Rimmer is best known."

In May of 1879, illness forced Rimmer to discontinue his lecturing at the Boston School of Fine Arts. He died at a daughter's home in South Milford, Massachusetts, on August 20th of that year and was buried in the family plot in Milton Cemetery, near the grave of the abolitionist Wendell Phillips. A Boston sculptor, Truman H. Bartlett, subsequently compiled an illustrated biography, *The Art Life of William Rimmer: Sculptor, Painter, and Physician*, which appeared in 1882. In the years 1880 and 1916 in Boston, and 1916–17 in New York and Boston, exhibitions of Rimmer's surviving art works attracted favorable attention. The impresario and choreographer, Lincoln Kirstein, wrote the catalog-text for the comprehensive 1916–17 exhibition held at the Whitney Museum of American Art, New York, and the Museum of Fine Arts, Boston. Mr. Kirstein is preparing a full-length biography of William Rimmer at the present time.

In her book, *Art in America* (1929), Suzanne LaFollette described the lifelong predicament of Dr. William Rimmer, a versatile American whose *Art Anatomy* remains as perhaps his richest legacy.

> The frustration which characterized the artistic career of William Rimmer was in part temperamental. He was the son of a Frenchman said to have been of noble or royal birth. . . . The family lived apart in a little world of its own, a world of art, literature and music. . . . Culturally and socially he was a misfit; and his sense of the difference between himself and those about him increased his spiritual isolation. . . .
>
> His life was a long struggle against poverty, first as a painter, later as a physician in a small New England village, and at last as a teacher of anatomy. . . . He was much too strong for the artistic ignorance and timidity of his time, and for its priggish sentimentality.
>
> He should have lived in the time of the Renaissance or the country of Delacroix. Some of his drawings have a rush and a sweep of line that remind one of Leonardo or of Rubens. . . . Other drawings . . . show an imaginative quality reminiscent of William Blake. Still others . . . were evidently inspired by Michelangelo. . . . One wonders what Rimmer might have achieved had his country in his time offered wider scope for his gifts than the teaching of anatomy and the publication of books on the subject. But given his peculiar nature, in a harsh and unsympathetic environment, his life could not be other than disappointing to himself or his work other than disappointing to those who realized how totally incommensurate it was with his remarkable gifts.

REFERENCES

1. Richardson, Edgar P.: (Text and catalogue notes) *Andrew Wyeth: An Exhibition Organized by Pennsylvania Academy of the Fine Arts*. Philadelphia, 1966, p. 10.

2. Hutchinson, Robert: (Introduction) *Art Anatomy. By William Rimmer*. New York, Dover Publications, 1962.

3. Wilson, James Grant, and Fiske, John (editors): *Appleton's Cyclopaedia of American Biography*. New York, D. Appleton and Company, 1888, vol. 5, p. 256.

4. Adams, Adeline: *Dictionary of American Biography*. New York, Charles Scribner's Sons, 1935, vol. 15, pp. 613–614.

5. Richardson, Edgar P.: *The Way of Western Art, 1776–1914*. Cambridge, Harvard University Press, 1939, p. 133.

6. Groce, George C., and Wallace, David H.: *The New-York Historical Society's Dictionary of Artists in America 1564–1860*. New Haven, Yale University Press, 1957, p. 537.

7. *Who Was Who in America, Historical Volume, 1607–1896*. Chicago, The A. N. Marquis Company, 1963, p. 144.

8. Carr, James F. (compiler): *Mantle Fielding's Dictionary of American Painters, Sculptors and Engravers*. New York, James F. Carr, Publisher, 1965, p. 303.

9. Johnson, Thomas H.: *The Oxford Companion to American History*. New York, Oxford University Press, 1966, p. 685.

10. Larkin, Oliver W.: *Art and Life in America*, Revised and Enlarged Edition. New York, Holt, Rinehart and Winston, 1964, pp. 186–187, 251, 279, 280, 282.

11. Richardson, Edgar P.: *Painting in America. The Story of 150 Years*. New York, Thomas Y. Crowell Co., 1956, pp. 261–262.

12. *Museum of Fine Arts. Exhibition of Sculpture, Oil Paintings, and Drawings by Dr. William Rimmer*. Boston, Alfred Mudge & Son, 1880.

13. Bartlett, Truman H.: *The Art Life of William Rimmer: Sculptor, Painter, and Physician*. Boston, James R. Osgood and Company, 1882.

14. Kirstein, Lincoln: (Text and catalog notes) *William Rimmer, 1816–1879. Whitney Museum of American Art, New York, November 5–27, 1946; Museum of Fine Arts, Boston, January 7–February 2, 1947*. New York, 1946.

15. La Follette, Suzanne: *Art in America, from Colonial Times to the Present Day*. New York, W. W. Norton & Co., Inc., 1929, pp. 146–149.

The *Mémoire sur les différents genres d'asphyxie* of Doctor Jean François Coste

By HAROLD J. ABRAHAMS, PH.D.,* AND MARION B. SAVIN, M.S.

AFTER the American victory at Saratoga, the turning point of the War for Independence, France became an open ally of the Americans. Louis XVI's government recognized the independence of the United States of America, and treaties of alliance and commerce between the two nations were drawn up and signed. Louis dispatched an army of seven thousand men, two million francs in gold, and a number of ships under the command of Admiral de Grasse. The British commander, Cornwallis, failing in his effort to drive out "that boy" (the young Marquis de Lafayette, who, with his small army of two thousand men, had so skillfully defended the coastal reaches of Virginia against superior British forces), was ordered by Clinton to establish a base on the coast where he could have lines of communication with the British Navy, and, accordingly, he fortified himself on the peninsula of Yorktown to await support. However, General Washington, sensing a great opportunity, ordered his army across New Jersey and down the Chesapeake, joining Rochambeau, and now the combined armies, sixteen thousand strong, outnumbering Cornwallis' seven thousand, penned him up from the landward side, while French naval forces, arriving from the West Indies, bottled him up from the sea. Cut off on all sides, Cornwallis surrendered on October 19, 1781, ending the military phase of the war.

The king of France had sent a sizeable medical corps, consisting of more than fifty physicians, surgeons, pharmacists and wardmasters, forty-four students of surgery and pharmacy and about one hundred infirmary attendants. The director of the medical staff and chief physician of the expeditionary force which saw action at Yorktown was Doctor Jean-François Coste (Fig. 1), a graduate of the Paris Faculty, who had been helped into richly deserved professional prominence by Voltaire, after demonstrating marked talents in coping with an epidemic at Gex, in administering the affairs of military hospitals in Nancy and Calais, and by the publication of several articles while at Nancy. There are many evidences that the Doctor, though not one of the great scientists of all times, was a genuine humanitarian and a truly able physician. At his request, facilities were established at landing points of the fleet to provide necessary medical services, various refreshments, "and salads and cherries" as a health measure after the long ocean voyage. He coped successfully during the seventy-two-day crossing with about one thousand cases of scurvy among the sailors and from six to seven hundred cases among the soldiers, as well as outbreaks of dysentery and small pox. Large quantities of cinchona for the treatment of fever had, by his order, been taken along. These are but a few of the many evidences of the kindly and the efficient nature of this great and good man. Through his efforts, many complete hospitals were established at strategically located points. The one at Williamsburg, Virginia, housed at the College of William and Mary, won very favorable comment for its excellent organization and medical care, leading to the beliefs that Rochambeau's army profited from "far more elaborate medical service than any-

* Research Associate, Library of The College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, Pennsylvania 19103.

thing the British or American forces maintained over here" and that French military medicine was probably more advanced than was that of the British, because "the French maintained larger armies and in those days were regarded as a military people".[1] By contrast, the frightful lack of care available to the American soldier in that war is scarcely believable in the twentieth century, a situation described in other writings.[2]

Doctor Coste was destined, before his life was to come to an end, to win an enormous number of honors, both at home and abroad, under the monarchy and under the republic, in the literature of medicine (twenty-eight publications), in professional and civil life, but enumeration of all of these would take us too far afield for present purposes, and it will suffice our purpose if we list merely a few of his American honors: honorary degrees of Doctor of Medicine from the College of William and Mary and University of Pennsylvania, membership in the American Philosophical Society, and an invitation in 1780, through the French ambassador, to present a paper upon the subject of asphyxiation to the newly formed Humane Society of Philadelphia.[3] This paper, handwritten in

FIG. 1. Doctor Jean-Francois Coste. Engraving by Ambroise Landieu (1788–1841).

French, was duly presented by the Doctor, and, according to claims, was not only translated into English, but also ordered printed by the Humane Society. The present writers have carried on an extensive

[1] Hall, Courtney R.: The Beginnings of American Military Medicine. Annals of Medical History, Series 3, Volume I: 122–131, 1942.

[2] General Washington wrote to him on October 7, 1782, expressing thanks for his "humane attention to the American Hospitals . . . at Williamsburg after the seige at York". (Fitzpatrick, John C.: *The Writings of George Washington*, Volume 25, p. 244, Washington, 1938.)

[3] Humane societies were organizations devoted to the rescue of persons "who are supposed to be dead, from drowning, also for preventing & curing the disorders, produced by drinking cold liquors, and by the action of noxious vapors, lightning, and excessive heat and cold. . . ." (See the pamphlet, *Humane Society of Philadelphia*, Philadelphia, 1788, in the Library of The College of Physicians of Philadelphia, and several other libraries.) The formation of the first such society took place in Amsterdam in 1767, and numerous other cities soon had their own organizations: Venice and Milan in 1768, Paris in 1771, London in 1774. The Philadelphia Humane Society, the first such society in America, was founded in 1780 (the year in which Doctor Coste landed in America, just before the Yorktown campaign) and remained active until 1856, when it relinquished its funds and property to the Pennsylvania Hospital. (In 1861 the name was revived as "the Philadelphia Skating Club and Humane Society", with present headquarters in Ardmore, Pa.) The Massachusetts Humane Society and the Royal Humane Society of London are still functioning. Both the City and State of New York had humane societies, and there were others in America and Europe. (See Thomson, Elizabeth H.: The Role of Physicians in the Humane Societies of the Eighteenth Century. Bulletin of the History of Medicine, Volume XXXVII, No. 1, January–February, 1963; see Austin, Robert B.: *Early American Medical Imprints, 1668–1820*, U. S. Department of Health, Education and Welfare, National Library of Medicine, Washington, D. C., 1961, pp. 108–109, for the location of some of the publications of American humane societies.)

correspondence with various types of libraries both at home and abroad[4] and with dealers in historic documents[5] and have seen frequent reference in these letters to both the English translation and the printed form of this paper, the French original of which bore the title, *"Mémoire sur les différents genres d'asphyxie"*. One correspondent even informed us that *"cet ouvrage fait à la hâte a été traduit en anglais et distribué par le Congrès (des U.S.A.) dan toutes les Républiques des Etas-Unis en 1781"*. However, until very recently we could find no trace of the *Mémoire*, the claimed translation into English or the copies ordered printed and distributed throughout our States. The Minutes of the Humane Society, among its entries dealing with Doctor Coste, bears one showing that the Society returned the English translation to him, presumably with the original in French, which gives us reason to believe that the *Mémoire* was, indeed, translated into English, but there is in the Minutes no notation that the paper was published, nor have any reprints been found, and it seems very doubtful that the work was ever published.[6] The search for this elusive document, which John E. Lane, M.D., had also sought and reported that he was not able to locate[6a], seemed futile. But Dr. Whitfield J. Bell, Jr., Librarian of the American Philosophical Society, and Mr. Murphy D. Smith, of its Manuscripts Department, while recently examining the treasure troves of the Library of the Pennsylvania Hospital, the first hospital in America (1751), found, among the papers of the Humane Society to which the Pennsylvania Hospital had fallen heir, the long-sought document. We have since studied it, and now present its substance or pith. It may be worth noting that our path through the Coste text was not always pleasantly easy, many passages presenting thorny situations for the student and translator of this document. One source of difficulty is that, while apparently written by a professional scrivener, the calligraphy sets up problems for the unwary reader. For example, the letter "E" of the word Eau (last line, page 5 of the original) is so written as to appear to be an "I" (lau), causing a perplexity for the translator; *de l'avande* (line 12, page 15) proves to be

[4] The Historical Society of Pennsylvania, Library Company of Philadelphia, American Philosophical Society, Free Library of Philadelphia, University of Pennsylvania, The College of Physicians of Philadelphia, Athenaeum of Philadelphia, Library of the State of Pennsylvania, American Antiquarian Society, National Library of Medicine, Library of Congress, Library of the State of Virginia, the Bibliothèque Nationale, Archives Historiques du Service de Santé Militaire, Archives de France, etc.

[5] The Philip H. and A. S. W. Rosenbach Foundation, Charles Sessler, etc.

[6] "February 5, 1781. Translation of the 'memoir upon ye different kinds of asphyxia' sent by the author Doctr. Coste first physician to the Army of France in America, being read it was unanimously resolved;

That the President be requested to return Dr. Coste a letter, expressive of the obligations of the Society to him for his elegant memoir, & of their grateful sense of his Merit & Politeness.

That the same Committee which formerly waited on the Minister of France do again attend him to return the Thanks of the Society for his very polite Complyance with their Request & for his particular attention in procuring and forwarding to them Doctor Coste's Memoir.

That the Translation of Dr. Coste's Memoir be transmitted to him (agreeable to his Desire) with the President's letter.

It was proposed that Dr. Coste be elected a Corresponding Member of this Society—upon which the vote being called for, Dr. Coste was unanimously elected. . . .

(Signed) B. Duffield, Secty."

(From an entry in the Minute Book of the Humane Society, now in the possession of the Pennsylvania Hospital, Philadelphia.)

[6a] "The pamphlet must be extremely rare for it is found in none of the catalogues that I have been able to consult of the large libraries in this country or Europe, nor in the libraries of historical societies that I thought might possibly have a copy of it. That it was satisfactory to the Society is evident from the fact that Coste was elected to membership." Lane, John E.: Jean-François Coste. Americana, January, 1928, pp. 59–60.

de lavande. The spelling is often archaic and the vocabulary and sentence structure often troublesome. There is also ambiguity in meaning; for example, the same word is used for funnel and for pipe or tube. Among additional difficulties is the fact that Doctor Coste was rather free in his use of antecedents, creating some doubt in the mind of his reader as to precisely what he is referring.

Efforts to find the box which Doctor Coste presented to the Humane Society, with his *Mémoire*, have so far been unsuccessful. It is not to be found at the Pennsylvania Hospital, where the *Mémoire* was located, and our efforts to locate a similar one at likely places, both at home and abroad (Archives de France, Bibliothèque Historique de la Marine, Musée de la Marine, Bibliothèque de la Faculté de Médecine, all in Paris, the Royal College of Physicians, London, and the University of Geneva, Switzerland), have not been successful. However, a similar box (Figs. 2 and 3) has been located at the Wellcome Historical Medical Museum, London, England.

(Dr. Wyndham D. Miles, Historian of the National Institutes of Health, has called our attention to the fact that a seemingly successful use of the insufflation apparatus is reported in The American Medical Recorder, Volume 3 (1820), pages 339–340, and signed "J.M."—James Mease?)

The date of the preparation of the *Mémoire* makes the author a pioneer in the literature, with all that this implies.

The Memoir: Types of Asphyxia and Methods of Treatment[6b]

Memoir on the different types of asphyxia, written at the request of the Humane Society of Philadelphia, transmitted by the Chevalier de la Luzerne, Minister Plenipotentiary of His Very Christian Majesty, King Louis XVI in the United States of America, and set down, at order of the Count de Rochambeau, Lieutenant General of the armies of the King of France, Knight Grand Cross of the Royal Order of St. Louis, Governor of Villefranche in Roussilon, Commander of the French Army in America, by Dr. Coste, chief physician of the said army, member of the Royal Societies of Medicine of Paris, London and Edinburgh, Honorary Fellow of the Royal College of Medicine of Lorraine, Member of the Royal Academy of the Sciences, Arts and Literature of Nancy, Associate of the Academies of Dijon and Lyons, and of the Royal and Patriotic Societies of Sweden and Hesse-Homburg.

The unique purpose of the Humane Society of Philadelphia bespeaks the kindly nature and humane instincts of its organizers, under a government of the free and the brave. It is a pleasure to supply that which the Society requests, while, at the same time, carrying out the wishes of Count Rochambeau, who is desirous of serving his king, justly termed by the Society "the friend of liberty and patron of the sciences".

Asphyxiation, of all maladies the most dreadful, because it so closely resembles the lifeless state, is not often seen. It is this very proximation to death which makes it so easy to mistake it for the real thing. It required an enlightened and humane generation to resolve this difficulty. The first successful attempts to cope with asphyxia were made in Holland in the middle of the eighteenth century. Drowning is more frequent in the low countries. At first glance it would seem that the percentage of the victims who are successfully treated is high. The Society of Amsterdam has boasted of saving fifty-three lives in a single year. Most of the victims were removed from the water promptly, while others had survived a period of three quarters of an hour in the water, responding successfully to the treatment to be stated later. The stories of these rescues were read both at home and abroad. The methods involved were eagerly adopted, and there was astonishment at the promise fulfilled,

[6b] Doctor Coste takes as his point of departure the philosophy of Thomas Sydenham: *Scientia morbi et auxilii simplex*.

FIG. 2. Apparatus and accessories for insufflation with tobacco smoke or other stimulating vapors. This apparatus was issued by the Royal Humane Society of London in 1774. (Courtesy of the Wellcome Historical Medical Library, London, England, and its Librarian, Mr. E. Gaskell.)

in France, Italy and Germany. But in the low countries, with so many drownings, because of the many canals and rivers, the number of revivals constitutes a low recovery rate, computed on the number of revivals per given number of cases, (i.e., the *percentage* of recoveries, rather than the *number* of these). Viewed in that light, the results attained in Holland seem less favorable that those in France.

The city of Paris was one of the first to set up an organization for rescuing drowned persons, credit for this being due in great part to the zealous efforts of Mr. Pia, one of the city aldermen. Mr. Pia spared neither trouble nor costs. He recorded details in an interesting periodical. The French government, always interested in the public good, has encouraged rivalry among persons to make useful suggestions dealing with the subject. The result of his leadership has been the development of a number of advances, approved by him, and passed on to the public.

Academies of Science and Faculties of Medicine have invited the public to contribute ideas on this problem, extending the limits of the study of asphyxiation to causes other than by drowning, i.e., to carbon dioxide, carbon monoxide and other gases.

Among French physicians who have done distinguished work in this area of medicine are the illustrious Antoine Petit, anatomist and author of a scholarly work upon the immediate cause of death by hanging, de Sauvages, professor of medicine at Montpellier, on the different types of asphyxiation, and Gardane, of Paris, on ways of restoring drowned persons to consciousness. We must here also mention Bartholin and his fumigating apparatus and resumption of its use. The abuses which these persons were made to endure do not, in any wise, diminish our debt to them nor the glory of their achievements. Portal, lecturer on medicine at the Royal College of France, in his treatise on apparent death, gives interesting information obtained from autopsies upon victims of asphyxiation and, possibly, also obtained from other authors. Louis, Secretary of the Academy of Surgery of Paris, and the Royal Surgeons Faissole and Champeaux, of Lyons, have repeated various experiments leading to an understanding of the cause of death by drowning. Other writers on the subject are: du Chemin de l'Etang,

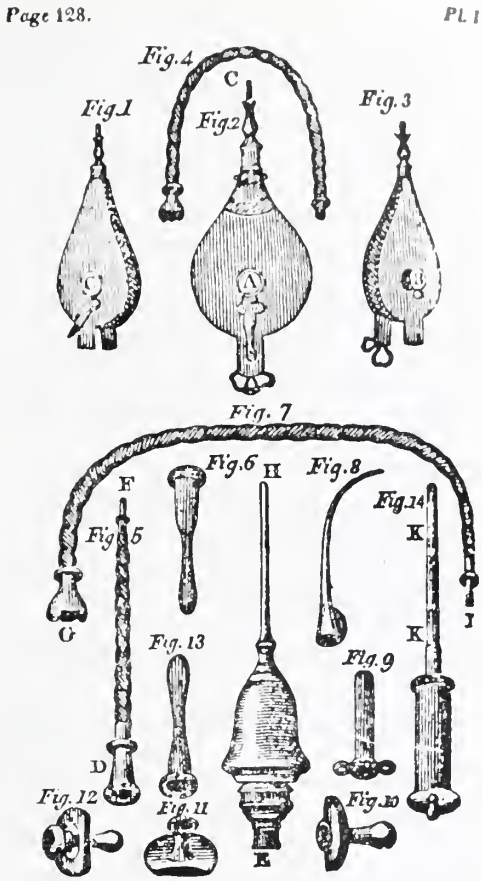


Fig. 3. Accessories contained in the insufflation box similar to that presented to the Humane Society of Philadelphia by Doctor Coste. (Courtesy of the Wellcome Historical Medical Library, London, England.)

physician to the King, and de Villiers, of the Paris Faculty, as well as Harmant, of the Academy and College of Nancy, who, in 1775, presented a complete treatise upon the cause of suffocation due to the products of the burning of charcoal, and upon a method of successful treatment.

Sage, of the Academy of Sciences, in 1778, stated his high regard for ammonium fluoride as a specific for all kinds of asphyxiation. This was followed by a refutation by Bucquet, of the Faculty of Paris, who demonstrated the alkaline nature of certain noxious exhalations and stated his conviction that the proper

treatment of such cases was the use of concentrated acids. On the same subject, interesting remarks appeared in *Le Journal de médecine de France*, as well as the journals of physics and of natural history of Abbé Rozier, and the gazette *Salutaire*, of Bouillon. An excellent and recent contribution is the paper on harmful exhalations in general and in particular by Majault, of the Faculty and Great Hospital of Paris, a physician well qualified to discuss the hazards posed by side effects resulting from the chemical reactions in the stomach brought about by the medicines administered.

Parmentier and Lavoisier, of the Academy of the Sciences of Paris, last year published a study on the accidents which befall gravediggers or ditchdiggers and harvesters of grapes and how to prevent and treat them, a paper based upon the best thought in chemistry and medicine.[7]

[7] *Observations sur les fosses d'aisance, & moyens de prévenir les inconvéniens de leur vuidange (vidange??). Par MM. Laborie, Cadet le jeune, & Parmentier*, Paris, 1778.

This is a detailed report by Lavoisier, de Milly and Fougeroux on the researches of Laborie, Cadet and Parmentier dealing with cesspits and their disinfection. (It is Number 323 in *Bibliography of the Works of Antoine Laurent Lavoisier, 1743–1794*, by Denis I. Duveen and Herbert S. Klickstein, London, 1954.) In this very lengthy report, Lavoisier and colleagues add, to the account of the authors of the "*Observations sur les fosses . . .*", an account of their own researches dealing with the effectiveness of disinfectants suggested in that study, concluding that Laborie and partners had found the best means thus far offered by science: a combination of fire, ventilators, and a limited amount of lime offering the best protection. Lavoisier and partners also "emphasize the necessity for organizing the emptying service of the cesspits in such a way that pollution of the waters of the Seine, which are used for drinking purposes in Paris, will be prevented". Lavoisier also reported upon Bucquet (*Mémoire sur la manière dont les animaux sont affectés par différens fluides aériformes, méphitiques . . .*) and upon three papers by Parmentier on the spoilage of grain and flour. In addition, there are three more Lavoisier reports upon the subject of cesspits. (Duveen and Klickstein, Numbers 74, 220 and 486. Numbers 320 and 321 are also of interest in connection with cesspits and with treatment of asphyxia.)

At the moment, so far away from my library, I cannot check to see if I am perhaps overlooking some other works upon the subject, but I think that I have mentioned the most important French works. The English studies are already known to Philadelphians. If I recall correctly, the journal of Duncan (of Edinburgh) contains some important observations, and de Haen, of Germany, in his *Ratio Medendi*, which must be available to American physicians, gives a great deal of attention to the subject.

Even if I had, before me, all of the literature mentioned above, I should feel some hesitancy about writing an acceptable summary for the Society. However, I have the feeling that the disparaging attitude of some of these authors seems to imply that they believe that only by discrediting other theories can they advance their own opinions on so vital a subject.

The Humane Society is interested less in theories than in practical techniques, and, therefore, I shall present these in terms of my own experiences and those of others, dealing with the order in which they should be administered and the cases in which such techniques deserve either to be preferred or to be ruled out.

I should also like to add that the box which I now present to the Society, as a model, was most graciously given me by the men of the Royal Navy, similar ones also being located at the city halls, military, naval and charity hospitals. Accompanying this apparatus are a short flannel vest, a flask of Eau de Luce[8] (or of some other penetrating substance) and several packages of emetics. The life-saving stations located at the water's edge in our coastal cities are equipped with such material, and, attached, are directions for administering the treatment, so that rescue operations may begin

[8] A mixture of mastic, alcohol, oil of lavender, oil of amber and aqua ammoniae. It is also known as "Spiritus Ammoniae Succinatus" and "Aqua Luciae" (after its inventor) and was used as a stimulant and antispasmodic.

immediately, even if no skilled persons are present.

Claims of rescues, confirmed, have been made in the accounts of Mr. Pia. These may not be questioned. Yet the symptoms in some of these cases may have been overstated (because of the vanity of the reporters), and facts, to prove the merits of the proposed theories, should have been furnished. Moreover, in dealing with fatal cases, there is the temptation to ignore lightly such objections as might reflect anything but merit upon the rescue operations, even though they were unsuccessful.

No effort should be spared, when applying resuscitation methods, even in the most hopeless cases. As soon as it is evident that the patient is a victim of asphyxiation, good sense and humaneness dictate the application of methods which offer even the slightest hope of recovery rather than abandonment of the unfortunate person as a hopeless case.

On the subject of asphyxiation, we may distinguish the following classes: (a) the early stages, (b) the therapeutic cases and (c) the pathognomonic cases.

The first class is similar to that of infirmity, but the subject is able to save himself before he finally sinks or falls victim to inhalation of noxious gases. The physician should be strictly objective in his judgments as to the state of the patient. Revival efforts must be maintained. After fumigation by tobacco, for example, the intestines are often left in an inflamed and distended state, and this may be mistakenly ascribed to other causes. The byproducts of treatment are so often erroneously set down as symptoms, and the records of autopsies thus result in unfortunate misconceptions and prejudices.

The best path through the many contradictions and errors is to cling to the principal, unvarying, observed facts, for these will suffice to explain the causes of death and the best way to prevent it.

In all cases of asphyxiation, regardless of the cause, the face is swollen and of violet hue, the eyes protruding, and there is swelling of sinuses and blood vessels of the head, often with rupturing of the vessels and spreading of blood into the surrounding tissues, the discoloration being noticeable in neck and front of the chest. The tongue becomes enlarged, filling the mouth, from which it often droops, and there is a foamy exudation of saliva. (Sometimes, however, despite the convulsed muscles of the lower jaw, the mouth remains normal in shape, an unfavorable sign.) The bronchi are also often reddish, and the lungs violet, almost blue. The pulmonary artery is full of blood, as are the right ventricle and right auricle of the heart, the venae cavae and the jugular veins. On the other hand, the pulmonary veins, left auricle, left ventricle and aorta are empty. These effects of asphyxiation have been verified by all observers and are common to all cases.

Varying with the differing causes of asphyxiation, and present in addition to the symptoms common to all such deaths, as stated above, are the following special symptoms:

Asphyxiation due to cold. The symptoms resemble those of the apoplectic state, but are much more in evidence, and are attended by glacial external cold and rigidity of the limbs. The blood is congealed, as in death from drowning (in which, especially in seasons other than summer, the limbs are also often rigid). The lungs are generally filled with blackish blood, similar to that in the right auricle and ventricle. Since the epiglottis normally covers the entrance to the bronchi, water is found in the lungs only very rarely and not in great quantity, the slightly reddish wateriness being present in the body when death was violent, and, in my opinion, resulting from the convulsive state which precedes death.

Asphyxiation due to vapors, noxious or otherwise. The limbs retain their flexibility and warmth for a long time. The body is slightly bloated. The eyes are bright. The

blood, whether or not diffused in various places where it accumulates during asphyxiation, is here rarefied and broken down. Putrefaction sets in more promptly than in cases of death by drowning or freezing.

Asphyxiation by drowning. The solids and liquids become denser. On the other hand, where asphyxia is due to air pollution, the liquids are noticeably less dense.

The first state compares with the effects of coagulant poisons, the second with those which bring about dissolution. The appropriate treatments have, therefore, been proposed for each. The factor which is constant to all cases is the immediate cause of death—the interruption of circulation, causing apoplexy. This interruption is caused in the first state by the lack of air and in the second by blocking circulation. Such phenomena would justify an autopsy.

It is, therefore, proper to group all similar symptoms together, and concentrate upon the problem common to all cases: that of restoring to the lungs, as promptly as possible, as much air of good quality as necessary to re-activate circulation, the temporary interruption of which produces asphyxiation and the cessation of which causes death. Despite the fact that there is this common factor in all cases, the causes of asphyxiation may seem to differ in different accidents, and it is therefore necessary to proceed with caution and orderliness and avoid making great errors by being overly zealous, because some methods of resuscitation may be dangerous.

1. As soon as the victim of drowning is taken out of the water, rescue techniques should be applied, even in the boat, or on the river bank, if the season of the year permits and if the distance to the nearest home is too great, for the slightest delay may prove fatal.

2. If the case is less serious, there should be no hesitancy in moving the patient, because good facilities are a major factor in successful treatment.

3. The victim's clothing is to be removed, and, if the body is cold, hand massage should be applied, using flannel or brushes, while making sure that his head is in an upright and slightly elevated position, so as to prevent it from falling on the chest to a position which would compress the jugular veins.

4. Apply gentle pressure and massage to the neck by hand or with the flannel cloth soaked in alcohol.

5. If the face is very red or of a violet color, the head and chest noticeably swollen, the eyes glittering, the body still flexible and warm and the constitution of the victim seems vigorous enough, a vein may be opened and only three to six ounces of blood let out. This to be repeated, if it seems necessary to do so.

6. Ammonium carbonate, or a sponge soaked in a liquid such as ammonia (or spirits of ammonia or smelling salts), is passed beneath the nose.

7. There must be no delay in introducing air into one of the nostrils, while simultaneously pinching closed the other nostril, to prevent the air from escaping. This is one of the swiftest ways of making the lungs start functioning. Rapid inhalation is of the greatest advantage. It may seem repugnant to a person to apply his mouth to that of a corpse, but who, when he thinks that he himself might at some time be in a similar difficulty, would not hope that another brave and kind soul would do as much for him?

8. Time should be taken for starting a blazing fire and putting the patient in a warm bed or surrounding him with warm ashes. This should not be overdone, as it might produce unfavorable compression, especially in the region of the neck, and care should be taken to prevent the ashes from getting into the body through the nose or the mouth.

9A. At the slightest sign of life, the resuscitation efforts should be continued. Strong and hardy patients should be bled

temperately, to relieve distension of the jugular veins and other places. If the patient is of a weak constitution, or if the stomach is full of food or liquids, extended use of emetics will be advantageous, because this will relieve discomfort and prevent apoplexy by relieving pressure which the stomach places upon the blood vessels, thus removing the obstacle to the return of the blood from the head. Besides, nothing is better than moderate blood-letting for restoring the body-tone needed for recuperation. Both the administration of emetics and the blood-letting should be done by a capable and experienced physician.

10A. If the ability to swallow, and the pulse and breathing, reappear, confirming the return to life, the victim may be given a small amount of toast and water, to which a little good wine has been added.

11A. It is at this point that I recommend vesication. It clears the head and gives tone to the body. Nothing is more ridiculous that the published advice, to use vesicatories after all other methods have failed.

12A. Speed of convalescence is proportional to the duration and intensity of the asphyxiation, and the treatment must take into account the complications which may have developed. Where it is a case of simple asphyxiation, so that only the functions have been interrupted, rather than the body damaged, the victim becomes normal again as soon as the functions are restored, and it is as though he had been for a time asleep, but has not returned to being his wakeful self.

13A. I think it essential that, if possible, victims of near-drowning stay away from the sight of water for a long time. The nerves of such persons are in a state approaching that of epilepsy, and the sight of water could bring on such an attack.

9B. If the methods thus far discussed fail to bring success, massage should be continued indefinitely, and an enema, made from a half ounce of dried tobacco leaves and an equal amount of seasalt, given. This may be repeated if the first enema is retained, or if this treatment seems promising.

10B[9]. Finally, after a reasonable lapse of time (two hours for a recent accident or an hour and a half for one less recent), the fumigating apparatus, the model of which I am sending to the Society, and the technique of the use of which will be found at the end of this memoir, may be put into action.

I cannot over-emphasize the need for using this apparatus with the most careful moderation, for it is possible to inflame and distend the intestines so badly that, from the study of certain corpses, we may note that the treatment might as easily have resulted in losing the patient as in saving him. Besides, this apparatus, while having a favorable effect upon the diaphragm, compresses the lungs and increases the burden upon them, by creating an obstacle to the introduction of air into the bronchial tubes.

The enema is almost as advantageous as the fumigation, having none of the inconveniences of the latter. The fumigation apparatus is being shown so as to give only the prudent an idea of what it is like, in the expectation that they will feel too kindly to it to try to improve it indiscreetly.

11B. The tube is much more useful for introducing air into the bronchi, by way of the nose, than are tobacco fumes for inflaming the intestines.

12B. The tube may also be used via the mouth, the nostrils being closed while squeezing and compressing the lips.

13B. The soles of the feet may be warmed by a heated iron or sealing wax, accompanied by cupping.

14B. Massage and warm-ashes treatment should be continued, and hopefulness

[9] Beginning with 10B there is no necessary relation between the A and B items of the same number.

should be maintained, because the many useless efforts will later result in fewer regrets than the slightest suspicion that all possible means of saving a life had not been tried.

Sudden loss of movement, sensation and circulation which characterize the state of asphyxia after submersion also characterize asphyxia due to air which is unfit for breathing, whether because of loss of some of its elasticity or because of its sluggishness. Among the advances made by our physics and chemistry, one is the enhancement of our knowledge of noxious exhalations which corrupt the air. Some are of an acid nature, like those produced by certain minerals, those resulting from fermentation of grapes or those produced by the burning of carbon. On the other hand, some are alkaline, for example, certain emanations of animal origin, as well as those of ditches, sewers, graves, hospitals, prisons and dungeons. Why, in spite of the differences in the causes of these emanations, is the effect, death, the same? In all cases, pulmonary circulation and breathing begin to be constrained, after which they stop. Does the air cease to be wholesome because, in some cases, it is acid in character and, in other cases, alkaline? Let us be guided by the Prince of Medicine, who, while having the highest regard for the body fluids in health, illness, and in regaining health, often expressed his own puzzlement, and advised physicians to devote themselves to observing the symptoms and means of preventing them.

1. In cases of fainting, a second kind of asphyxia, a state of anxiety having preceded the attack, the first thing to do is to move the patient to a place where the air is better. Open the doors and windows, so as to let in fresh air, thus preventing more cases of fainting. The air may be tested by means of animals or by the flame of a candle, both of which should behave normally in the air, if it is wholesome.

2. Respiration may be induced by means of restoratives applied at the nose, using such chemical salts or spiritous liquids as smelling salts, ammonium carbonate or spirits of ammonia, for cases caused by certain acidic emanations, such as those given off in the fermentation of beer mashes; for the other cases, use acid odors, such as salt of vinegar[10] or spirit of lavender.[11]

3. If the onset is no more than a threatened asphyxia, the treatment just given above should be sufficient. The patient should be informed that he must avoid all constrictions on his body for several days. If he is young and has a good blood-supply, phlebotomy will be necessary. He must also take a refreshing acidic drink and eat less than he usually would.

4. If it is decidedly a case of asphyxia, there should be no hesitancy in removing the victim's clothing, irrespective of the season, for he should be exposed to a great deal of air. He should have cold water poured over him repeatedly, and he should be stretched out in a comfortable manner. The physician should not become discouraged by the decreased breathing rate noticeable at first. The treatment must continue, without let-up, for several hours. The theory involved here is that it is important to attain a state of relaxation and rarefaction. In the great city of Nancy a most brilliant and most solemnly confirmed success was thus achieved by Dr. Harmant of the College of Medicine and the Academy of that city.

5. Phlebotomy at the jugular vein is one of the most direct and prompt methods of clearing the brain.

6. It may be useful to apply gentle pressure to the chest, especially in the region of the heart.

[10] Sel de vinaigre (?). Sodium acetate, very impure with acetic acid?

[11] An alcoholic extract of lavender flowers, or a mixture of oil of lavender, one part, and alcohol, nine parts.

7. If these treatments are unsuccessful, we should follow the counsel of the advocates of introducing pure air into the lungs in the manner we have advised above for victims of drowning. If the patient does not recover, blow air through the nostrils, because air falling upon the glottis perpendicularly doubles the ease with which it is introduced, for if introduced through the mouth the end of the tube would press upon the epiglottis, thus shutting off the windpipe and resulting in passage of air into the stomach, where it would add further to the distention of that already existing in the intestines, causing a great deal of trouble.

8. The precaution just advised shows how unwise it would be to resort to insufflation of the intestines with tobacco vapors in similar cases. The disadvantages would be doubled, for the enlargement and bloated condition would constitute the greatest obstacles to the draining of head and chest. However, it may, under certain conditions, serve the same purpose as the bed of warm ashes, massage and warming procedures.

9. One would do well to give an enema of one part vinegar and two parts water.

10. In extreme cases one may resort to a bronchotomy, in order to put air into the lungs more swiftly. However, the seeming cruelty and slight prospects of success offered encourage only rare use of this technique.

When, from the state of his pulse and vigor, the patient seems to have become himself again, it is advisable to continue minor blood-letting, thus lessening the unnatural oversupply of blood and permitting the enlarged blood vessels to return to their natural caliber and tone.

As the patient perspires a good deal in bed, his thirst must be allayed by ample quantities of acidic drinks, such as oxycrate[12] or lemonade.

[12] A mixture of vinegar and water.

Simple enemas, using a little vinegar in the water, are very useful in this stage of recovery.

For control of nerves, Liquor anodynus mineralis Hoffmanni[13] is preferable to other antispasmodics.

A little wine may be given, if the patient's strength seems to require it.

The measures required by convalescence from other kinds of asphyxia are equally applicable here. Places which are known to present dangers of such mishaps should be avoided. Forgetfulness of the hazards of dangerous places has caused many unfortunate accidents, especially in view of the evident dramatic effect upon the nervous system.

My preference for the acids is based upon the evidence that the body fluids decompose, thus accelerating the development of gangrene seen in the corpses of fatal cases. Not that alkalis may not be used in isolated cases as stimulants like the acids, and even to greater advantage, yet it must be admitted that all that we can be certain about is that we must try to administer that which, by being of opposite nature, will neutralize the morbific substance which is present. I hope that by saying so I demonstrate the impartiality and candor of the spirit in which I have written this simple memoir for the Society.

I hope to have the indulgence and approval of the Society, and that my efforts and my goodwill toward it will reflect the respect which this physician feels for it, while admitting that he would feel infinitely flattered if favored with the privilege of sending, from France, whatever would be of interest in furthering its beneficent work.

[13] This is Spiritus Aetheris (spirit of ether), the composition of which differs in different countries. According to the French Codex, it consists of ether and alcohol in equal weights. It is a simplified form of Hoffmann's Anodyne (Spiritus Aetheris Compositus, compound spirit of ether), which consists of ether 325 cc., alcohol 650 cc. and ethereal oil 25 cc.

P.S. My knowledge of English is not adequate to writing my essay in that language, and I hope that one or more members of the Society, who understand French, will wish to translate it, for that would make the idioms understandable, and if the Society were to honor me with a reply, and with other requests, it could be so kind as to have translations of this small treatise and other papers made, if adjudged worthy.

The Insufflation Box

The last two pages of the *Mémoire* (Figs. 4 and 5) are devoted to a description of the box for insufflation, but, although

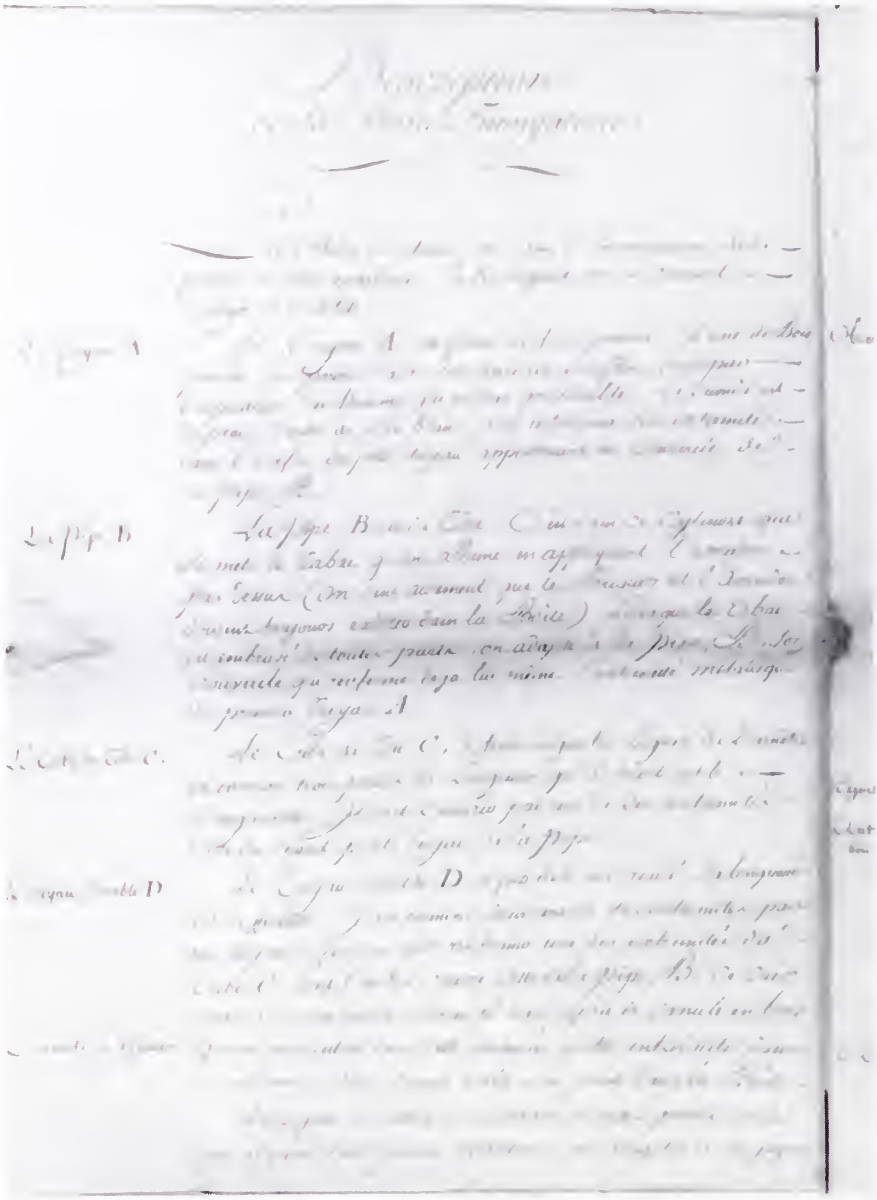


Fig. 4. A page of Doctor Coste's original manuscript in French, now in the Historical Library of the Pennsylvania Hospital.

constant reference is made to the parts, by using letters of the alphabet to indicate these, no drawing accompanies the descriptive passages, so that the symbols add little to comprehension by the reader. Doctor Coste writes that a person will be able to understand the structure and function of the box at a glance. In brief, the apparatus consists of a wood-encased, brass combustion chamber, in which tobacco is burned, and a series of tubes, which are of varying flexibility because they are made of different materials, such as wood, sheet iron (tin-plate) or rolled leather. Flint and tinder are included. There are fittings (of wood) for inserting the end of smoke-

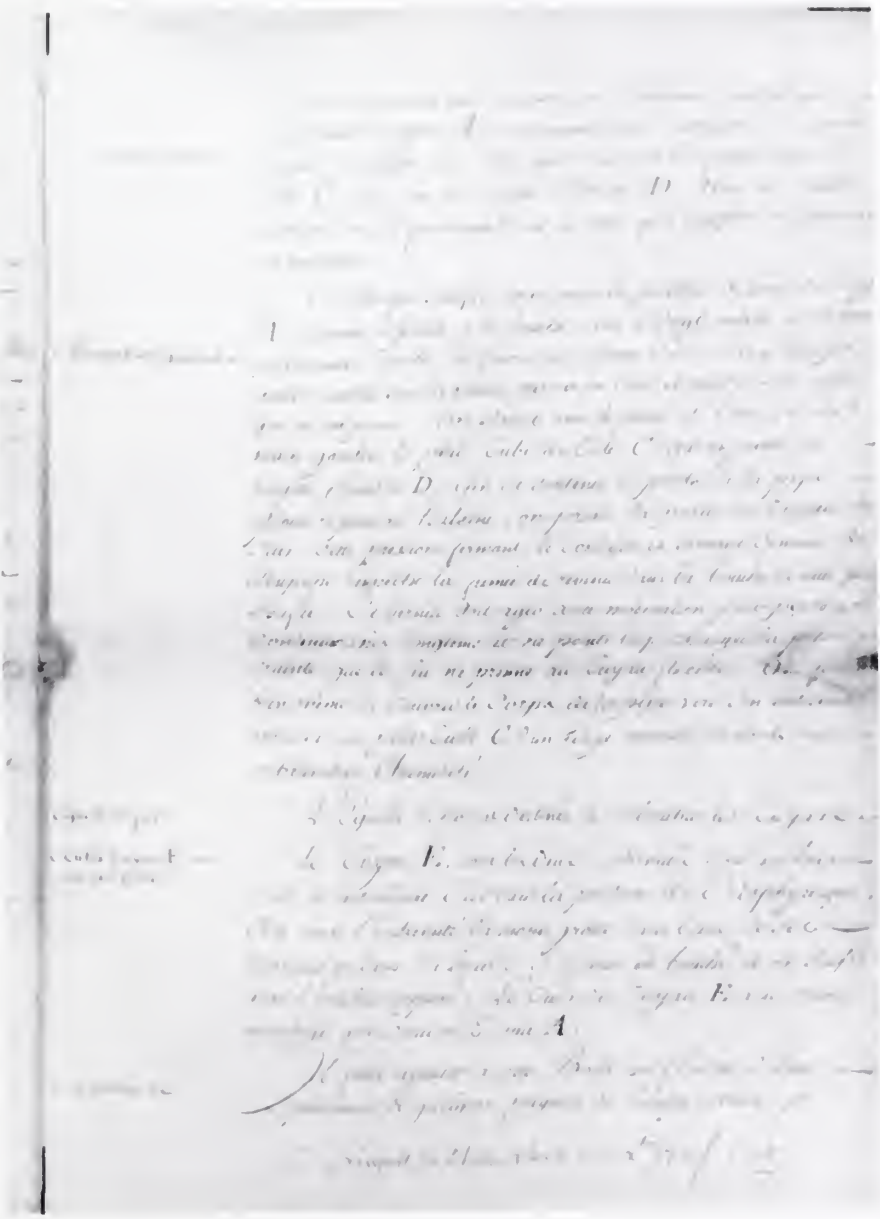


Fig. 5. The last page of the original manuscript.

bearing tubes into the fundament, or into mouth and nostril. The driving force may be supplied either by bellows or by having another person blow through a tube anterior to the combustion chamber. If power is supplied by a person, rather than bellows, he should hold that tube between right index finger and thumb in such manner that these rest at the place where wooden tip and leather tube join, the digits resting on both wood and leather. In this wise the person who blows may not only be able to prevent backfire of smoke into his own mouth, but also have control of the amount of smoke administered to a patient by pressing upon the leather at will, but too much or too constant pressure may cause clogging or set fire to the tube. It is a good idea to wrap a wet linen cloth around the tube. An iron wire or needle is supplied which may be used for cleaning the tubes, as are also a flask of spirits and a supply of antimonyl potassium tartrate.

[A series of drawings of one form of such an apparatus may be seen in *The Accidents of Human Life* by Newton Bosworth (New York, 1811, p. 128) and in *Reports of the Royal Humane Society*, 1809, 1811, 1812.]

The Royal Humane Society advised a pair of bellows and a box containing a brass nozzle and several flexible tubes of various lengths to fit the bellows, a curved silver pipe to inflate the lungs "by passing it down the throat beyond the glottis", a silver cannula for bronchotomy, various ivory nostril pipes, various clyster pipes, a syringe for injecting cordials into the stomach, four ground glass-stoppered bottles (containing such substances as essence of peppermint, ether, brandy, alcohol, ammonia water, rum), sponge, flannels, steel, tinder box and matches. The uses of the contents of the bottles are discussed in Bosworth (pages 123–141) and in the Reports of the Royal Humane Society.

The following excerpts from two letters recently received from libraries in Paris may be of interest:

(*I*) "*. . . nous avons découvert un édit promulgué à GENEVE le 15 Janvier 1764, qui donne quelques conseils sur les soins à apporter aux noyés.*

Après diverses considérations sur la façon de rèchauffer le noyé, il dit notamment: 'Puis une personne robuste, appliquant exactement sa bouche sur celle du noyé et lui serrant les narines d'une main, lui soufflera fortement de l'air chaud dans les poumons. Mais cela est insuffisant il convient très particulièrement de lui souffler de l'air dans le fondement au moyen d'une pipe ou d'un autre tuyau ou d'une gaine de couteau dont on aura coupé la pointe ou encore d'un soufflet. L'effet sera meilleur si on remplace l'air par la fumée chaude et irritante de tabac (de préférence, la qualité "tabac de troupe" dite grosse coupe).

"Les moyens pour ce faire sont simples: on introduit dans le fondement le tuyau d'une pipe allumée, on enveloppe le fourneau d'un papier percé de plusieurs trous, on le met dans la bouche et on souffle de toutes ses forces; on peut aussi allumer deux pipes dont on bouche les fourneaux; on met le tuyau de l'une dans le fondement et on souffle par celui de l'autre. Mais on a maintenant une machine destinée à cet usage. Le Magnifique Conseil en a fait établir quelques-unes qu'il fait placer en différents endroits à portée du lac, du Rhône et de l'Arve. Ces deux secours, souffler de l'air chaud dans les poumons et de la fumée de tabac dans les intestins sont de la dernière importance; plus ils seront prompts et soutenus, plus ils seront efficaces' . . ."

(Signed) *C. R. Vichot*
Le Capitaine de Vaisseau
Directeur des Musées de la Marine
(Palais de Chaillot, Paris)

(*II*) "*. . . dans l'*: Essai sur les maladies qui attaquent le plus communément les gens de mer, *par G. M. Maître es Arts et en chirurgie, Marseille, 1766, on lit, page 189: 'on soufflera avec un chalumeau des poudres . . . celles de tabac, d'iris, d'ellebore, . . . on suppléera à ces poudres par la fumée de tabac soufflée dans les narines . . .'*

Page 191: 'Parmi ceux qui restent à décrire, l'introduction de la fumée de tabac dans les intestins mérite d'occuper la première place. . . .'"

(Signed)
Capitaine de Vaisseau Fliche
Chef du Service Historique de la Marine

Acknowledgments

We are deeply grateful to Dr. Wyndham D. Miles, Historian of the National Institutes of Health, for his valuable assistance; Anthony S. Glickman, Columbia University; Mr. Sylvain Boni; Mrs. Richard E. Patterson, for her patience and devoted efforts in typing the manuscript; to those who helped in his or her own way, including Miss Joyce Cooper, Pennsylvania Hospital; Mrs. Gertrude D. Hess, American Philosophical Society; Dr. John B. Blake, Chief, History of Medicine Division of the National Library of Medicine; Mrs. Lillian Tonkin, Library Company of Philadelphia; Mrs. Edith B. Hampel,

Library of the University of Pennsylvania, and the many staff members of the libraries, both at home and abroad, referred to in our text and in footnote 1, with special mention of Mr. F. Dousset, of the Archives de France, and "last, but not least" Mr. E. Gaskell, Librarian of the Wellcome Historical Medical Museum of London, whose patient search resulted in his finding the 1774 apparatus issued by the Royal Humane Society, thus meriting special thanks.

REFERENCES

1. HALL, COURTNEY R.: The Beginnings of American Military Medicine. Annals of Medical History: Series 3, Number 4, 1942.
2. FITZPATRICK, JOHN C.: The *Writings of George Washington*. Volume 25, Washington, 1938.
3. THOMSON, ELIZABETH H.: The Role of Physicians in the Humane Societies of the Eighteenth Century. The Bulletin of the History of Medicine: Volume XXXVII, No. 1, January–February, 1963.
4. AUSTIN, ROBERT B.: *Early American Medical Imprints, 1668–1820*. Washington, D. C., 1961.
5. *Humane Society of Philadelphia*. Philadelphia, 1788.
6. LANE, JOHN F.: Jean François Coste. Americana: Volume XXII, Number 1, January, 1928.
7. DUVEEN, DENIS I. AND KLICKSTEIN, HERBERT S.: *A Bibliography of the Works of Antoine Laurent Lavoisier, 1743–1794*. London, 1954.
8. BOSWORTH, NEWTON: *The Accidents of Human Life*. New York, 1814.
9. Reports of the Royal Humane Society, 1809, 1811, 1812. London.
10. Minutes of the Humane Society of Philadelphia. Historical Library, Pennsylvania Hospital, Philadelphia.
11. WHITNEY, W. D. (Ed.): *The Century Dictionary and Cyclopedia*. New York, 1895.
12. STILLÉ, ALFRED AND MAISCH, J. M. (Eds.): *The National Dispensatory*. Fourth edition, Philadelphia, 1887.

Reynell Coates (1802–1886): Politician, Poet, Editor, Naturalist, Lecturer and Physician[1]

By WILLIAM J. SNAPE, M.D.[2]

FEW physicians of Camden County have been so well known beyond its parochial boundaries as Reynell Coates. Because of his wide-ranging, extra-medical activities, some previous local histories have exaggerated his political accomplishments, while generally acknowledging the significance of his varied achievements. In the most recent history and directory of the Camden County Medical Society, however, he is dismissed with but a few lines. The older imbalance is preferable to the present almost silence. Such near-oblivion is surely undeserved. In consequence, I have attempted to re-evaluate this curious and fascinating figure from his own writings, from public documents and newspapers, and from biographical sketches and references to his writings and addresses.

As physician and naturalist, lecturer and editor, poet and novelist, politician and political pamphleteer, Reynell Coates was obviously a man of many parts. As we shall see, he was also an anomaly.

He descended on his paternal side from English Quakers who had migrated from Sproxton, Leicestershire, to Pennsylvania in 1684. The original American progenitor was John Reynell Coates, who was an attorney for William Penn. Reynell Coates' grandfather, Samuel Coates, was a wealthy philanthropic Philadelphia merchant. His father, also Samuel, was manager of Pennsylvania Hospital for nearly 41 years; 13 years of this tenure he served as president of the board of trustees. (An excellent full length painting of Samuel Coates by Thomas Sully hangs in the lobby of that hospital today.) His father also was, for several years, the treasurer of the Philadelphia Library Company. The family was recognized among those of the highest social position, being particularly friendly with Stephen Girard. The family was honored by the city's naming one of its streets, "Coates Street". This is now Fairmount Avenue. Camden also named a small court after the family.

His mother's ancestors, who were Yorkshire Quakers, migrated to New Jersey and Long Island in the 17th Century. Her grandfather, John Hornor, aided in the founding of Princeton College. Her great-grandfather was the first person to free his slaves in New Jersey. He was extremely active in the abolition movement thereafter. Dr. Coates' older brother, Benjamin Hornor Coates, also a physician, helped to found the Pennsylvania Historical Society and was a physician to the Pennsylvania Hospital.

Reynell Coates, who was a son of his father's second marriage, was born December 10, 1802, at the northwest corner of Front and Walnut Streets in Philadelphia. His primary education was commenced at one of the public schools founded by William Penn. In 1813 he removed to Westtown Friends School for one year. He returned to Philadelphia and continued his classical education at Friends Secondary on Fourth Street in Philadelphia. Later he transferred to a private boarding school in Burlington, New Jersey, operated by John Gummere.

In a biographical sketch published during Coates' lifetime, it was claimed he acquired a marked aptitude for mathe

[1] Section on Medical History, The College of Physicians of Philadelphia, 10 October 1967.

[2] 546 Stevens Street, Camden, New Jersey 08103.

matics under the tutoring of Gummere. He showed his regard for his old teacher by dedicating his volume, *Popular Medicine*, to him 19 years later. However, if our opinion may be influenced by his writings on boarding schools, his experiences while away from home were not happy.

He became a resident physician at Pennsylvania Hospital while attending medical school in 1819. He was the last student-physician to serve his residency without a medical degree. He was graduated from the University of Pennsylvania in 1823. The title of his thesis was "Fractures of the Inferior Extremities".

After graduation from medical school he signed on as a ships-surgeon on an East Indian trading ship. He visited Bengal but the trip was halted at Calcutta by the outbreak of the Burmese War. However, he gathered material on the trip that was to be the subject of several essays later in life.

He returned to Philadelphia in 1824 and, after joining the Philadelphia Medical Society, settled down to practice medicine with his brother, Benjamin, at Third and Walnut. In 1827 he married Margaretta Abbott, the daughter of William Abbott, a well known Philadelphia Quaker. There were two daughters born of this union, both of whom apparently died in infancy. He continued the practice of medicine until 1829 when he was appointed to the professorship of Natural Science at Allegheny College in Meadville, Pennsylvania. However, for some reason he became disenchanted with his position and left after but one year. (The present archives of the college can add no further information about the time he spent there.) However, Coates described one of the characters in his essay, *A Sermon by a Marmot*, as "one recently appointed to a chair in a collegiate institution almost embosomed in the wilderness. He had accepted the station in a moment of depression, all uninformed of the country where it flourished and had

Fig. 1. Reynell Coates, M.D.

just arrived to blush beneath the honors of the professional gown in halls that rejoiced in a faculty—*lucus a non lucendo!*—of three persons and wanted but a library, an apparatus, influence and a class to render it an honor to the state that chartered it." Meadville was fairly close to the frontier in Coates' time.

After his resignation from Allegheny, Dr. Coates practiced medicine in Bristol for the next two years. While in Bristol he evidently suffered severe pecuniary losses and was deprived of his children. He found the narrow village life unsuited either to his talents or disposition. He returned to Philadelphia after two years in 1834.

The period immediately thereafter (John Hart in a contemporary news article implied) was for Coates a bleak period. When he returned to Philadelphia, he gave up the practice of medicine and devoted his time to writing and to medical education. In 1835, he withdrew from the Society of Friends and thereafter was attached to no particular sect. His misfortunes seemed to mount, and in April 1836 his wife died.

By December of that year, 1836, he be-

came attached to the Scientific Corps of the South Sea Exploring Expedition as a comparative anatomist. A disagreement between Com. Thomas Jones, the leader of the expedition, and Secretary of the Navy Dickerson about equipment and personnel delayed the preparation of the expedition. Later, a smaller expedition was organized under Captain Wilkes and the post of anatomist abrogated. When the expedition did sail in 1838 without Dr. Coates, it was the first exploration beyond the North American continent sponsored by the United States government. It may be noted at this time that Benjamin Coates, his brother, gave medical advice to the explorers preparatory to sailing.

Dr. Coates became a widely known lecturer on medical subjects and traveled from Philadelphia to Boston, Baltimore, New York and St. Louis to enlighten enthusiastic audiences. In addition to these exertions, from 1833, the date of his first literary effort, to 1846, he had published several elaborate monographs in the *Cyclopedia of Practical Medicine;* forty articles had appeared in various medical journals. The Academy of Natural Sciences of Philadelphia published several of his malacological investigations. He published three popular scientific volumes: (1) *Popular Medicine*, (2) *First Lines of Physiology*, (3) *First Lines of Natural Philosophy*. Numerous communications in prose and verse were published in *The Western Literary Magazine*, *Sartains*, and *Grahams Magazine*. He became editor of *Leaflets of Memory* in 1845. This annual continued under his editorship until 1854 and was a repository for much of his literary output. His literary style was cumbersome, pedantic and generally difficult to read. His sentence structure is so complicated that the reader feels he is wading through rather than reading. Very little of his writings have endured. He contributed mostly to the annuals of his day, and hence much of his scholarly attainments were thrown away as the whole gaudy race of annuals has perished. The following sentence from "Dreams of the Land and Sea", which appeared in the 1842 volume of *Grahams Magazine,* is typical of Dr. Coates' literary style: "While striving to avoid whatever is irrelevant or out of keeping, I have not endeavored to confine myself, in these sketches, within the limits of simple narrative, but have ventured occasionally to mingle facts with speculations on their causes, or to follow their consequences to probable results: nor have I totally discarded the imagination—although the scenes are invariably drawn from nature, and the principal personages are real characters—the accessory actors only are sometimes creatures of the brain." It would seem he hated periods.

This antagonism toward nice divisions in his prose is also characteristic of Coates' personality in general and of his activities as a whole. In consequence, it will be necessary in this brief sketch to impose artificial divisions upon the severely composite Coates. I shall proceed, therefore, by considering in order: his personality, his politics, his interest in education, and his concluding years in Camden.

What we know of the man's characteristics has been pieced together from several biographical sketches. Physically he was stocky and above average in height with a rather large but well formed head. He was broad-shouldered with a "front like Jove", according to one of his biographers. He was powerful and evidently conditioned himself with long walks on fishing and hunting trips. He was described as a logical and powerful speaker whose voice, while low-pitched, had a distinct harshness of timbre. He evidently was not particularly fond of companionship. However, he became president of the Camden City Medical Society and Vice President of the Philadelphia County Medical Society. Dr. Coates, in his *Popular Medicine*, lays down rigid rules regarding alcohol. Yet one of his

biographers mentions his capacity for good food and drink. Oberholzer, in his *Literary History of Philadelphia*, quotes Coates as remarking of Walt Whitman, "I do not object to his going to public houses and getting tipple on my credit but when he impersonates me and does it, it is too much and I will not stand it." Of course, Whitman did not resemble Coates and was seventeen years younger. As for his taste for good food, practically every biographer notes he did his own cooking in his later years.

He was born well, had the advantages of excellent training and social position. He was ambitious and intelligent. But one of his strongest characteristics was his obstinancy, as illustrated by the following anecdote from George Morgan's *History of Philadelphia*. His father and he became engaged in an argument over a trivial matter. The discussion waxed heated for a prolonged period of time with neither yielding. Suddenly Reynell grasped the older man's arms, pinning him to the chair, and declaimed, "Father, thee shall not budge out of this chair until thee admits I am right and thee is wrong."

It is perhaps not strange that a physician-literateur such as Reynell Coates should have become involved in the socio-political scene of the day. The country was buffeted by social and economic changes brought about by the influx of immigrants from Europe (many of whom were "dumped" as undesirables by unfriendly countries), a rapidly expanding frontier, a boisterously fluctuating economy, the unanswered ethical and economic questions of slavery, and developing industrialism. The youthfulness of the Republic had not permitted a wide understanding of the broad, general political philosophies of the nation. The Whig Party, severely damaged by repeated defeats at the polls and perilously split over States Rights, was beginning to disrupt. The Democrat Party, having grown fat, indolent and somewhat corrupt, was repulsive to a large part of the electorate. Throngs of immigrants with languages, ideals, religions and habits that varied from those of the majority of the native Americans had disturbing consequences.

Coates in 1837, along with several others of his class, organized a political movement called the Native American Party, and at the National Convention held in Philadelphia in 1845 he wrote the platform of the party. The Native American Party advocated the rights and privileges of Native Americans as opposed to immigrants. It demanded a residency of twenty-one years as a qualification of naturalization. It hoped to forbid the holding of real estate except by those born in America or by naturalized citizens. Where public repugnance of the Whig and Democrat Parties was sufficient, the Native Americans flourished. Religious bigotry and other xenophobic characteristics produced riots in St. Louis and Philadelphia during the 1840's. Rival factions burned each others' churches. In Baltimore, organized gangs of hoodlums armed with carpenters' awls, hence called "pluguglies", patrolled the polling places. Those who knew the secret pass word could vote, others were "plugged". In Massachusetts the Native Americans were successful in electing a majority to the state legislature, and they almost won a majority in New York State. In fact, the Native American party was quite popular in Camden. Dr. Lorenzo F. Fisler, a physician and eight times mayor of the city, was elected once as a member of the Native American Party. He had been elected, however, as a Whig and Democrat previously and later served as a Republican. Considering such a capacity for shifting principles, one is tempted to speculate on what would have been the enormity of his practice and position in today's medical environment.

Fortunately or unfortunately, the Native American Party did not possess Dr. Fisler's remarkable adaptability. The party's weak

platform could not possibly compete for interest with slavery as a political question. Built largely upon a negative sense of fear, anxiety and frustration, it rapidly deteriorated into a secret society called "The Know-Nothings". It is difficult for us to believe that such a well-educated patrician from such a distinguished family as Coates would become associated with a bigoted, hooligan-dominated group such as the Native American Know-Nothing group. However, one must remember this was another age. Bellington in his book, *The Protestant Crusade*, suggests that even the Quaker merchants of Philadelphia publicly denounced the Protestant riots while covertly approving the movement. Other sects openly supported the opposing sides.

The background for the 1852 election was blurred and confused by a profusion of debatable questions which most of the electorate were reluctant to face or debate. Therefore, as in most of our elections, it was a campaign of personalities rather than issues. Daniel Webster, by his eloquent March speech in favor of the Missouri Compromise, had destroyed his chance for nomination as the Whig Candidate for President. His popularity had sunk so low he was despised in his own bailiwick.

Therefore, he was drafted to be the 1852 Native American candidate for president. His running mate for Vice-President was to be George C. Washington of Maryland. Washington declined the nomination and Webster neither accepted nor declined the bid. Webster died shortly before the election and Jacob Brown was substituted. Dr. Coates had in the meantime assumed the nomination for Vice-President. The ticket of Brown and Coates failed to carry a single state.

Dr. Coates continued his interest in politics at least until 1860, at which time, as a leader of the Native American Party, he met at Trenton, New Jersey, with leaders of the crumbling Whigs to form a new party in the state, the Constitutional Union. Delegates for the national convention were selected. The national convention selected Bell and Everett to run for the presidency. However, they could not prevail, and Lincoln became president.

Reflection on this strange interlude in a physician's life impresses one in several ways. Coates, the intellectual, seems to have been unable to influence others. He could logically evolve principles but was unable to convince the common man. He was too stubborn to compromise his opinions. Furthermore, he apparently lacked the type of simple, concise expression necessary to influence people. His literary style, we have seen, was pedantic, involved and structurally complicated. His sentence construction was much too involuted for any except the well-educated, and formal education was scarce in America of the time. His style contrasts vividly with that of Lincoln. Lincoln could reach the common people. His short explicit phraseology was understood by even the illiterate. Finally, with his quixotic intellect, Coates undoubtedly could never devote enough time to any one project to see it mature.

There were two by-products of his political activities that should be mentioned in passing. The first was the establishment of a newspaper that served as a propaganda organ for the Native American Party. The Party's first paper was the Philadelphia Sun, founded and edited by John H. Jones in 1843. However, in 1847 Jones and Coates became associated as co-editors of a new Native American organ, the American Banner and National Defender. A New Jersey edition was published in Camden beginning in 1850 and continued until 1856. By today's standards, the items can be called markedly biased at best. Misdemeanors of immigrants were exaggerated into acts of sedition and conspiracy.

The second by-product of the Native American movement was the founding of

the Patriotic Order of Sons of America, (POS of A) in 1817. Coates formed also an organization of youths 16–21 called the Junior Order Sons of America as a membership feeder for the parent group. The POS of A is still in existence.

Reynell Coates had a deep interest in medical education. In 1835 he delivered an address before the Philadelphia County Medical Society in which he deplored the state of medical education in America at that time. While he identified the University of Pennsylvania by name, his most vitriolic denunciation was directed at other degree-granting schools that were left unnamed. If one reads of the chaotic situation that prevailed in Philadelphia's medical schools of the period, one understands and sympathizes with Coates' deprecations. He compared the curriculum, the size of the faculty, the length of the term of study and the preparation of American students with European standards. He suggested an immediate enlargement of the curriculum and an increase in the size of the faculty. He advised a more prolonged course of study and stressed the necessity of pre-medical study. He believed there should be preparatory schools to select future medical students. Beside these far-reaching suggestions he advocated an increase in bedside teaching on the wards.

It was also during these early years that he became involved with his brother Benjamin, Franklin Bache, Henry Bond and others in the founding of the Philadelphia Academy of Medicine. This was probably a preparatory school for the University of Pennsylvania Medical School and not a degree-granting body. Whatever its purpose matters little, since it was dissolved after about 15 months of existence.

However, his interest in some preparation for medical training endured. In the preface of his book, *Popular Medicine or Family Adviser* (1838), he suggests that reading of the book may in some way help prepare the prospective student to study medicine. His lectures to lay people were to instruct the public in things of a paramedical nature as well as medical subjects.

Dr. Coates had a general interest in education throughout his life. When he first was listed in the Camden City Directory of 1850, it was as a "teacher". During the Civil War (1861–65) he maintained a private school for boys on Federal Street. As mentioned above, he had founded an organization for the purpose of educating young men in the principles of patriotism. He also was one of the early leaders in adult education in Camden. He was active in forming a microscopical society in Camden. It is said that this lay group of businessmen, druggists, lawyers, physicians and college professors made many valuable contributions to the identification and classification of fungi.

He also organized a Camden Literary and Library Association in 1870. This venture lasted only a short time.

Dr. Coates moved to Camden just as his star was to reach its zenith about 1817. He moved about from one dwelling to another with about the same frequency that he did previously in Philadelphia. He initially held himself aloof from the medical profession. He listed his profession as teacher in the city directories until 1867. This year he joined the Camden City Medical Society. He was elected to the vice presidency of this body in 1869 and in 1870 was elected president. His administration is remarkable perhaps only in that the physicians of the city agreed to raise their fees by 100 per cent up to $2 per house call. Thereafter the citizens had ill feelings toward the medical society. He was rarely active in the politics of Camden. One looks in vain for his name among the Board of Education, Board of Health or Council. However, in 1870 he was a prime mover with Dr. Jas. Ridge in acquiring a suitable water supply for Camden. Later during one of the several smallpox epidemics that plagued Camden, Dr. Coates and Dr.

Ridge again joined forces to erect a temporary hospital and to strengthen the quarantine regulations. During this time in Camden he was interested in microscopy and gave lectures on the microscope, its history and development. During this time he published many articles anonymously. One of these has been rescued and reprinted, "A Memoir to Bowman Hendry".

Dr. Coates died more or less a recluse on April 27, 1886, in Camden at 116 Linden Street, which is still standing, whether in poverty as some have said I am not yet convinced. His death certificate signed by the city physician, Dr. Onan Gross, attests only he had the "complication of senility".

Reynell Coates was a man of talent but without greatness, a man of extraordinary energy much of which he expended on trivia, a man of macrocosmic promise who had but microcosmic impact, a man of strong feelings who had little sympathy: talent without greatness—an outstanding minor figure of his times.

Dr. Samuel Duffield (1732–1814): Member of the First Medical Class Graduated in America[1]

By RANDOLPH SHIPLEY KLEIN, A.M.[2]

DR. SAMUEL DUFFIELD was a very active member of the American Philosophical Society, one of its curators for nineteen years, and president *pro tempore* on February 7, 1794. His family, named Du Fielde, were French Huguenots who sought asylum first in England and later in the North of Ireland. George and Margaret Duffield migrated to Octorora Township, Lancaster County, Pennsylvania, between 1725 and 1730, and then to Pequea Township. There in 1732 they had two sons, Samuel and George, the latter becoming a "New Light" Presbyterian minister and chaplain to the Continental Congress. Samuel went to Philadelphia and attended lectures in anatomy, materia medica, chemistry, and theory and practice of physick at the College of Philadelphia and the clinical lectures at the Pennsylvania Hospital. He received a M.B. from the College in 1768 as a member of the first class "who had received Medical Honours in America, on a regular collegiate plan" (1). At the commencement exercises, Samuel Duffield presented the affirmative answer to the question, "Num datur Fluidum nervosum?" Great responsibilities were given to these young doctors; the estimation of colonial medical honors rested largely upon the future conduct and eminence they would achieve. Therefore, Provost Smith exhorted the graduates, "never to neglect the opportunities which their practice would give them (perhaps above all men), of making serious impressions on their patients, and of exerting the man of Piety and consolation" (2).

In March, three months before receiving his degree, Samuel Duffield had announced in the Philadelphia newspapers that "he now carries on the business of a DRUGGIST, wholesale and retail" at the sign of Boerhaave's Head in Second Street near Walnut in a house lately occupied by Dr. Samuel Ormes, whose stock he had purchased (3). Besides Jesuit's bark, Bateman's drops, Godfrey's cordial, Daily's elixir, and other patent medicines, Duffield had "a few setts of very neat surgeon's capital and pocket instruments, and a variety of shop furniture". He also put up medical chests with plain and easy directions for sea captains, managers of iron works, and gentlemen with large families who lived at great distances from any physician. Within a year Dr. Duffield had taken Sharp Delany as a partner and, until 1777, the advertisements of Duffield and Delany, Druggists at the sign of Boerhaave's Head, appeared regularly in the Philadelphia newspapers (4).

Although Samuel Duffield advertised as a druggist, his medical degree enabled him to practice physick with reputation. He was appointed a physician to the Almshouse in 1772 and a physician of the Society for Inoculating the Poor in 1774. The latter group was formed when a number of gentlemen learned that most of the 300 deceased victims of the 1773 smallpox epidemic were children of the poor. After establishing a fund, the society enlisted the support of eight Philadelphia physicians. Dr. Duffield, along with Drs. Bond, Rush, Shippen, and others were among those who stalled a room in the State House on Tues-

[1] Section on Medical History, The College of Physicians of Philadelphia, 10 October 1967.

[2] Mr. Klein, a graduate student in history at Rutgers University, lives at 843 Davidson Road, Piscataway, New Jersey 08854.

days between ten and noon to receive applications. As Dr. Duffield's practice expanded, he devoted less time to the drug business, and, in October 1774, he announced in the *Pennsylvania Packet* that the partnership of Duffield and Delany would terminate on February 10, 1775, adding, "after the dissolution of the above partnership, the business will still be continued by one of the partners" (5). Sharp Delany carried on the business under the joint name until 1779; then he advertised alone. Later, in 1786, Duffield helped found The College of Physicians, an organization which sought to establish qualifications and much needed regulations for those who practiced medicine (6).

As early as October 10, 1775, Duffield offered his services to the rebelling colonists by assisting Dr. Benjamin Rush as "Surgeon and Physician to the People employed on Board Armed Boats" (7). Because Rush had been unable to find a qualified surgeon's mate and the Council of Safety was unwilling to pay the salary of two surgeons, each doctor received $16 per day or half the combined salary of a physician and mate. After this, Drs. Duffield and Rush often worked together. A pressing problem was tending the sick men of the armed boats. Duffield had them lodged at the pest house where he and Rush in rotation visited them. In April 1776, the Council recognized this arrangement by appointing Duffield and Rush to superintend and direct the hospital and pest house, fit them for the reception of the sick and provide nurses and necessary material. The responsibilities of the two broadened as they were appointed to receive all medicine, surgical instruments, and bandages belonging to Pennsylvania. Their report of June 25, 1776, proved disheartening. The state had four chests with scant supplies and no amputating instruments, another on board a provincial ship, and three for provincial battalions. The last-mentioned chests "are also wanting of lint and Bandages; and all Kinds of Instruments" (8). A modest supply of drugs and bandages was gathered, but it was "by no Means a sufficient supply". Further recognition was bestowed upon Duffield when Pennsylvania elected him to the Continental Congress on Sunday, September 11, 1777; however, there is no evidence that he served. Later, in 1782, as the war drew to a close, the Congress recommended that Pennsylvania settle the balance of depreciation pay due Duffield for his services as physician in the general hospital on the same principles they settled with other Pennsylvania physicians and surgeons of the army (9).

After the war, Philadelphia's dormant cultural institutions had to be revived if the city wished to retain her past eminence. Rebuilding the American Philosophical Society, which had not met regularly for more than a year and a half before the British marched on the capital, is an example of this effort. Samuel Duffield had been elected to the society in 1768, signed for the Committee on Medicine and Anatomy in 1769, and, in 1773, served on a committee "to confer with such people in this City as are concerned in the *Paper Manufactory* on the most probable means of establishing that branch of Business among us" (10). In September 1777, as rumors of impending invasion "turned everything topsy-turvy in town" (11), Dr. Duffield, one of the recently elected curators, was ordered to retrieve from the printers the copper plates used in the first volume of *Transactions*, "the Canal plate particularly, as it is the Theater of War at present and has been made use of . . . without the knowledge of the Society, and in a way that may give offense" (12). By this time the society as an institution had ceased to function for over a year (13).

In February 1779, Duffield was among those members who subscribed to an advertisement requesting members to convene "to take into Consideration the pres-

ent State of the Society, with such Matters as may be necessary to promote the Design of their Institution" (14). At the meeting to reestablish the society, Duffield supported the motion "that the Meeting and Business of the Society be revived" (15). Subsequently he supported the motion by his reasonably constant attendance. At the meeting of March 19, 1779, he was reelected curator, a position which he held from 1776 to 1791 (16).

Regular meetings were only a beginning. There were papers to publish and the museum to reorganize. On April 20, 1781, Dr. Duffield was appointed to a special publication committee within the Committee of Medicine and Anatomy (17). Evidently their efforts went for naught, for the American Philosophical Society did not publish a second volume of transactions until 1786. The condition of the natural curiosities in the museum was no less discouraging. Dr. Duffield and Ebenezer Hazard reported in April 1783 that "we find some of them to be absolutely perished; from others the Spirit has totally evaporated; but we think they may still be preserved:—others stand in need of an Addition of Spirit:—and the Remainder are in good Preservation" (18). The discouraging state of the society finally brightened under the imaginative leadership of Francis Hopkinson and supporters such as Samuel Duffield; by 1786, the society had published another volume of transactions, reorganized its museum, and even begun construction of Philosophical Hall.

In 1793, Philadelphia panicked under a crisis far worse than military invasion. Yellow fever, "the most appalling collective disaster that had ever overtaken an American city", as John Powell describes it in *Bring Out Your Dead,* threw the city into turmoil for four months (19). Philadelphia, the nation's proud capital in every sense of the word, with 55,000 inhabitants, appeared to contemporaries the hottest and dampest of American seaports. Swamps and marshes flanked the city, the slow-moving Delaware flowed past it depositing debris at high tide, and stagnant water and filth often lay in its streets. In the summer of 1793 the inhabitants noticed unusually dense swarms of mosquitoes. Early in August Dr. Benjamin Rush became aware of the presence of the dreaded disease. The distresses of the four months from August to November, wrote Charles Willson Peale, "cannot be comprehended, except by those who were present and could know the real situation of the inhabitants. Fear seemed to absorb all the finer feelings of the heart" (20).

Fear of the unknown intensified the awesomeness of the plague, for the cause of yellow fever remained unknown for over a century. All sorts of theories circulated; dampness, dryness, heat, cold, filth and the moon were among the many causes of the fever expounded upon by various writers at the time. The frightened city looked to the medical authorities for answers and leadership. For the first time in American history, the government appealed to a medical society. The College of Physicians, an organization of the most distinguished medical men in Philadelphia, which Samuel Duffield had helped found in 1786 and in which he served as censor from 1788–1789 and as treasurer from 1790–1791, was actually a body formed to establish standards of medical practice. At the urging of Mayor Matthew Clarkson, the college met in its room in Philosophical Hall on August 25, 1793, "in consequence of the prevalence of a fever of a very alarming nature in some parts of the city" and there considered "what steps should be taken by them on the occasion consistent with their duty to their fellow citizens" (21). The doctors spent the afternoon in "a free communication of sentiment" exploring the old argument whether the fever was imported and contagious or domestic and carried through putrid air. Dr. William Currie followed

the nosology of Dr. William Cullen, Professor of Chemistry at the University of Edinburgh, which supported the former contention. Dr. Rush challenged him by asserting the latter, but met little encouragement from his fellows. Judging from his activities during the epidemic and his subsequent opinions as physician to the port of Philadelphia, Samuel Duffield supported Currie's theory of contagion and its solution of quarantine. Within a few days, The College of Physicians issued a report suggesting eleven measures of prevention and protection. The most significant suggestion was to establish a large and airy hospital to receive the poor who could not otherwise be treated. The other suggestions combined the thinking of both Currie and Rush: avoiding infected people or carrying camphor or vinegar in one's handkerchief when visiting the infected are examples of the former, and burying the dead in closed carriages and exploding gunpowder to dispel foul air demonstrate the latter. These suggestions failed to halt the progress of the plague, and Dr. Duffield and others worked frantically to retard its effects (22).

On September 6, Dr. James Hutchinson, physician to the port, died of the fever, and Samuel Duffield and James Mease were appointed in his stead. Immediately they made inspections which Hutchinson had been unable to do, and Dr. Duffield also visited John Swanwick's house where the Orphan Committee housed strickened children. During his tour of duty, the *Aëdes Aegypti* bit Duffield, and, on September 29, Dr. Rush recorded, "Dr. Harris and Dr. Samuel Duffield are confined. The former uses the new, the latter Dr. Kuhn's remedies" (23). The new method referred to strong purges with mercury and substantial and frequent bleedings; Duffield favored a milder method. More fortunate than ten of his fellow physicians, Dr. Duffield recovered. By mid-October he was back at work. The epidemic reached a peak in October when as many as 119 people were buried in a single day, and various institutions, including The College of Physicians and the Pennsylvania Hospital, collapsed under the strain. Finally, on November 4, after discussions with others attending the sick, Duffield and Mease reported to Governor Thomas Mifflin, "We have the Pleasure to inform you, Sir, that, the Disease has so rapidly declined... that there is the greatest Reason to conclude that it will not be known in the City or adjoining Districts, in Two Weeks" (24). They therefore pronounced it safe for the legislature to meet at the constituted time. The announcement was a bit premature, for deaths continued into December, but the epidemic had abated greatly and declined further during the month. Mathew Carey's *A Short Account of the Malignant Fever, Lately Prevalent in Philadelphia* (1793) provides a graphic description of the horrors of the yellow fever epidemic and a list of 4,044 names of people who died of the distemper. The exact total of deaths can never be known, but the experience of the plague made indelible impressions upon those who survived it (25).

The fever recurred in 1794, 1796, 1797, and 1798, being especially severe in 1798, and with regularity throughout the nineteenth century. Throughout at least the next decade, Samuel Duffield continued as physician to the port and inspected vessels and men thought to be carrying the dreaded disease. Naturally as the hot summer of 1774 arrived, "many of the citizens, *sensibly* remembering the Calamity of last year, appeared to be alarmed", lest the horrors of the previous year reappear (26). In June, the newspapers contained alarming accounts of the fever raging in Jamaica and Havana. Particularly alarming was an account of a Dr. Grant in Kingston who spoke of a "very contagious" distemper. Although Dr. James Mease was inclined to fear yellow fever

from the West Indies, Dr. Duffield and William Allen felt that filthy ship-board conditions indicated ship fever and that the absence of the fever among the islanders themselves negated the idea of yellow fever. Lacking certainty, however, they reported, "Upon the whole, we cannot say that we have positive information that a dangerous Fever prevails in either of these islands, and are rather inclined to believe there did not . . . yet . . . we cannot pretend to be certain" (27). Thus, they left it to the governor to decide if quarantine was necessary (28).

Unwilling to take chances, the governor ordered a quarantine. Consequently Dr. Duffield cleared vessels from healthy islands with neither sick on board nor record of contagious fever during the voyage on the third day; depending upon conditions, he extended cautionary measures respecting other vessels. In his report of July 11, 1791, Duffield affirms the benefits of quarantine, cleaning vessels, and airing bedding on shore. Because ships came in a mile from shore, however, the task of transporting bedding and 200 to 300 passengers ashore in the ship's small boats took too much time and tried the passengers' patience. As a practical remedy, Duffield suggested that the inspectors of the port provide large flat-bottomed boats. As far as the fever in the West Indies was concerned, Duffield had no new information (29).

Later in the month, Duffield again visited a sick man in the Old Court House who looked a bit yellow. Taking no chances, Duffield removed him to the hospital of the Health Office and sent for the captain of the vessel on which the sick man arrived. The captain assured Duffield that the man merely suffered from the normal seasonable fever in Charleston. Duffield then visited the ship and on finding it clean reported the fever not of the contagious variety. Nonetheless, because the seasonable fever prevailed in Charleston and Savannah, he suggested "cautionary measures" (30).

As late as 1801, Dr. Duffield reported on the variety of fevers and agues on board ships in the port of Philadelphia and in the town. Perhaps Dr. Duffield, like many contemporaries, believed that distempers were influenced by the weather. In any case, for practical reasons or merely his own amusement, he "kept a register for many years" (31). In May 1803, he communicated some of his records of temperature, barometric readings, winds, weather and other occurrences to the American Philosophical Society (32).

By the turn of the century, however, Duffield was an old man, and records of his activities diminished. He did, however, remain active in The College of Physicians almost until his death. From September 6, 1808, until August 13, 1813, he was vice president; on the latter date he declined reelection, much to the Fellows' regret, "because his condition of health prevented him from attending the meetings of the College" (33). In January 1813, Dr. Duffield had written his will, leaving amounts ranging from $300 to $3,000 to his children, William, George, Elizabeth, John and Maria. Before dividing the remainder of his estate, he bequeathed to his son William Bryant Duffield (1770–1841), who received an M.D. degree from the University of Pennsylvania in 1790, "all my shop furniture and Medicine together with all my Medical Books including those on Surgery and Anatomy" (34). Maria, John and William were named executors. On November 27, 1814, at age eighty-one, Dr. Samuel Duffield died. His funeral was held at the Third Presbyterian Church which he had helped found and for which he served as ruling elder and trustee. He was buried near his wife Mary Bryant, who had died on April 18, 1791, in the Burial Ground of the Third Presbyterian Church. As Philadelphians mourned Samuel Duffield's passing, they recalled his

great services to the community and to medicine as a founder of The College of Physicians, as physician to the Almshouse, the Society for Inoculating the Poor and the port of Philadelphia, and his courageous work during the yellow fever epidemic. Dr. Samuel Duffield certainly lived up to the great responsibilities bestowed upon the first class "who received Medical Honours in America" (35).

REFERENCES

1. Pennsylvania Gazette, 30 June 1768.
2. Pennsylvania Gazette, 30 June 1768; Pennsylvania Chronicle, 27 June 1768; Sprague, W. B.: *Annals of the American Pulpit*, III. New York, 1858, p. 186; Norris, G. W.: *Early History of Medicine in Philadelphia*. Philadelphia, 1886, pp. 172–4; American Philosophical Society, Minutes, 18 July 1788.
3. Pennsylvania Gazette, 17 March 1768, Supplement.
4. Pennsylvania Chronicle, 7 March 1768, 3 April 1769; Pennsylvania Gazette, 20 April 1769; Pennsylvania Journal, 29 January 1777.
5. Pennsylvania Packet, 10 October 1774.
6. Pennsylvania Packet, 7 February 1774; Pennsylvanischer Staatsbote, 24 February 1779, Henrich Miller, Ed.; Norris, G. W.: *Early History of Medicine in Philadelphia*. Philadelphia, 1886, p. 118; Pennsylvania Magazine of History and Biography LVII:44, 1933.
7. Council of Safety, Minutes, 10 October 1775. Colonial Records X:362, Harrisburg, 1852.
8. Samuel Duffield and Benjamin Rush, Report, 25 June 1776, Gratz Collection, American Physicians VII:28, Historical Society of Pennsylvania.
9. Council of Safety, Minutes, 23 November 1775, 17, 21 April, 24 June 1776, Colonial Records X:409, 545, 549, 614; Pennsylvania Archives, Series 2, XIII:609, Harrisburg, 1890; Journals of the Continental Congress, No. 149, 1, folio 63.
10. American Philosophical Society, Minutes, 5 March 1773.
11. Butterfield, L. H., Ed.: *Letters of Benjamin Rush*, I. Princeton, 1951, p. 138. Benjamin Rush to Julia Rush, Philadelphia, 14 April 1777.
12. William Smith and Thomas Bond, Vice Presidents, to David Rittenhouse, Dr. Duffield, and Mr. DuSimitiere, Curators, 7 September 1777. American Philosophical Society Archives.
13. American Philosophical Society, Minutes, 15 November 1768, 5 February 1773.
14. American Philosophical Society, Minutes, 16 January 1779.
15. American Philosophical Society, Minutes, 5 March 1779.
16. American Philosophical Society, Minutes, 19 March 1779.
17. American Philosophical Society, Minutes, 20 April 1781.
18. Samuel Duffield and Ebenezer Hazard: Report of the Curators concerning the state of the natural curiosities in the museum, Philadelphia, 2 April 1783. American Philosophical Society Archives.
19. Powell, John: *Bring Out Your Dead*. Philadelphia, 1949.
20. *Ibid.*, p. 90.
21. *Ibid.*, pp. 30–2.
22. *Ibid.*, pp. 30–2, 36–7, 43.
23. Butterfield, L. H., Ed.: *Letters of Benjamin Rush*, II. Princeton, 1951, p. 687. Benjamin Rush to Mrs. Rush, Philadelphia, 29 September 1793.
24. Samuel Duffield and James Mease to Governor Thomas Mifflin, Philadelphia, 4 November 1793. Dreer Collection, Continental Congress, Historical Society of Pennsylvania.
25. Powell, John: *Bring Out Your Dead*. Philadelphia, 1949, pp. 87, 184, 209, 231, 281–2; Carey, Mathew: *A Short Account of the Malignant Fever, Lately Prevalent in Philadelphia*. Philadelphia, 1793; Samuel Duffield to Governor Thomas Mifflin, 18 November 1793. Gratz Collection, Consulting Physician, Port of Philadelphia, Historical Society of Pennsylvania.
26. Samuel Duffield and William Allen to Governor Mifflin, 1 July 1794. Gratz Collection, Consulting Physician, Port of Philadelphia, Historical Society of Pennsylvania.
27. *Ibid.*, 1 July 1794.
28. Samuel Duffield to Governor Thomas Mifflin, Health Office, 11 July 1794. Old Congress, Charles Francis Jenkens Collection, Historical Society of Pennsylvania.
29. Samuel Duffield to Governor Mifflin, 11 July 1794; Samuel Duffield to Governor Thomas Mifflin, Health Office, 22 July 1794. Gratz Collection, American Physicians VII: 28, Historical Society of Pennsylvania.
30. Samuel Duffield to Governor Mifflin, 22 July 1794.
31. Samuel Duffield: Meteorological Observations for May 1803. Manuscript Communications to the American Philosophical Society, Natural Philosophy I, 37. American Philosophical Society.
32. Samuel Duffield to the Board of Health, 3 August 1803. Dreer Collection, Physicians,

Surgeons. Historical Society of Pennsylvania; Samuel Duffield to William T. Donaldson, 27 March 1804, Dreer Collection, Members of the Old Congress, Historical Society of Pennsylvania.

33. Ruschenberger, W. S. W.: *An Account of the Institution and Progress of The College of Physicians of Philadelphia During a Hundred Years, from January 1787*. Philadelphia, Wm. J. Dornan, 1887, p. 91.

34. Samuel Duffield, Will, Recorded Will Book 5, 382, Recorder of Wills, Philadelphia.

35. Gibbon, H. O.: *A History of Old Pine Street* Philadelphia, 1905, pp. 346, 355; Ruschenberger, W. S. W.: *An Account of the Institution and Progress of The College of Physicians of Philadelphia During a Hundred Years, from January 1787*. Philadelphia, Wm. J. Dornan, 1887, pp. 12, 192, 193; Poulson's American Daily Advertiser, 28 November 1814.

Memoir of Karl Musser Houser 1893–1967*

By JACOB H. VASTINE, 2ND, M.D.

KARL MUSSER HOUSER was born September 30, 1893, in Pennsylvania Furnace, Huntingdon County, Pennsylvania, and died in the Hospital of the University of Pennsylvania on January 5, 1967, after a brief illness. He was the son of Luther Murray Houser, M.D., Class of 1897 of the University of Pennsylvania School of Medicine, and Anna Musser Houser. He was descended from hardy pioneer stock, the Houser and Musser names being closely associated with the early settlement of the Commonwealth. His father was a country doctor esteemed and loved by the people of his community, and Dr. Houser acquired his deep dedication to his profession and concern for the health and welfare of his patients from him, and his interest in the humanities from his religious and public-spirited mother.

Dr. Houser attended Franklin and Marshall Academy where he was graduated in 1911. He received his Bachelor of Philosophy degree from Franklin and Marshall College in 1915, and the Doctor of Science degree was conferred upon him in 1937.

Following his graduation from college he taught school in Clifton, Arizona, for two years, and obtained his M.D. degree from the University of Pennsylvania in 1921. While in medical school he trained in the Students Army Training Corps in order to be ready and available when and if his military service were needed. During that time he was also elected to membership in the honorary medical fraternity, Alpha Omega Alpha, which attested to his scholarly brilliance and keen interest in medicine. Following graduation he had the distinction of being selected by the Hospital of the University of Pennsylvania as an intern for two years and as its chief resident physician for the following nine months. Following his residency, he was associated with a physician in Havana, Cuba, in the practice of internal medicine for a year. In 1925, he entered the Graduate School of Medicine of the University of Pennsylvania and was awarded the degree of Master of Medical Science in 1926. While attending graduate school he became associated with the late Dr. George Fetterolf, Professor of Otolaryngology of the University of Pennsylvania, in both his private office and hospital work, until Dr. Fetterolf's death in 1932, after which Dr. Houser continued their practice until his retirement in 1962. This was a very pleasant and profitable association. He tempered his fee to the patient's ability to pay and hence his patients were doubly grateful.

He was widely recognized as an outstanding educator as well as a highly skilled practitioner. In 1939 Dr. Houser was appointed Professor of Otolaryngology in both the undergraduate and graduate School of Medicine at the University of Pennsylvania, and served in that capacity with distinction until his retirement at the age of sixty-five, when he became Professor Emeritus.

In addition to his association with both Hospitals of the University of Pennsylvania, he was Chief of Otolaryngology at

* Read before The College of Physicians of Philadelphia, 4 October 1967. Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

the Delaware County Memorial Hospital for many years. He was also Co-Chief with Dr. Edward H. Campbell of the Otolaryngology Department at the Children's Hospital of Philadelphia from 1941 to 1962, when he was appointed to the Emeritus Staff.

Dr. Houser was a prolific writer with more than thirty articles relating to his specialty in medical journals, as well as contributing to the Jackson and Coates textbook on otolaryngology. Many of his contributions were original observations; perhaps best remembered was the operation which he devised for infants with choanal atresia. Early in his career he designed an instrument made by Pilling and Company which is still used and bears his name.

He was a Diplomate of his Board, a member of the American Medical Association, Philadelphia County Medical Society, American Laryngological Society, American Otolaryngological Society, a Fellow of the American College of Surgeons, and the American College of Ophthalmology, Otology and Laryngology. In 1964 he was made an honorary member of the Philadelphia Laryngological Society. Elected a Fellow of The College of Physicians of Philadelphia on January 9, 1928, he was Chairman of the Section on Otolaryngology in 1941 and 1942 and served on the Executive Committee of that Section from 1943 to 1948. He was elected to the Council of The College of Physicians in 1949 and served through 1952. He contributed to these organizations by his participation in their scientific discussions as well as serving in an administrative capacity.

He was a member of the following fraternities: Sigma Xi, Alpha Omega Alpha, Phi Kappa Sigma and Phi Alpha Sigma.

In September 1924, Dr. Houser married Grace Ellen Shipley from Baltimore, daughter of Thomas J. and Mary Catharine Shipley. They enjoyed 41 years of happy companionship until he lapsed into unconsciousness as the result of an intracranial accident to which he succumbed. In the last twleve years he suffered from the effects of a fractured hip, but the pain which he experienced never dulled his spirit nor lessened his zest for life. They have two sons of whom they are justly proud, both having graduated from Princeton and later achieving success in their chosen fields. Karl Musser Houser, Jr. is a successful businessman in New York, and Luther Murray Houser, who was graduated from the University of Pennsylvania School of Medicine, is now a radiologist at the Pennsylvania Hospital. In addition to his wife and two sons, Dr. Houser is survived by five grandchildren and two sisters, Mrs. Leroy K. Metzger and Mrs. Randolph Thompson, both of State College, Pennsylvania. The Housers were members of the Bryn Mawr Presbyterian Church for many years.

Dr. Houser gave unstintingly of his time and energy to his profession and the practice and teaching of his specialty, but a memoir would be incomplete in not mentioning his protean interests. He and Mrs. Houser were successful horticulturists, their woodland home in Penn Valley being a show place with a profusion of blooms where they could also indulge their interest in identifying the many species of birds attracted to their feeding stations and bird baths.

His curriculum vitae was devoted to medicine, particularly otolaryngology, but there were many facets to his life. He was a bridge player of much more than average acumen, being a frequent contestant at the Hamilton Bridge Club of which he was a member. He was captain of the University Hospital Bridge Team in the Interhospital Bridge League of which he was President in 1942 and 1943. He was an average good golfer, being a member of the

Philadelphia Country Club and the Philadelphia Doctors Golf Association for many years.

Karl was everything that one would want a friend to be. He was scholarly, PH.B., M.D., M.M.SC., D.SC.; he was friendly and loyal. His was a life fulfilled, a potential achieved. We cherish many happy memories; we are all richer for having known him.

Memoir of Douglas Macfarlan 1886–1966*

By FREDERIC H. LEAVITT, M.D.

DOUGLAS MACFARLAN passed away in the eightieth year of his life on September 12, 1966, at his home in Ardmore, Pennsylvania. He is survived by his wife, Dorothy, a son, Michael Douglas Macfarlan, and a daughter, Mrs. Robert Freeman, whose two daughters, Ruth Wynn and Lisa Hill Freeman, are his only grandchildren.

Dr. Macfarlan was born on October 11, 1886, at 1805 Chestnut Street, Philadelphia. He was the son of Dr. Malcolm Macfarlan who had been born in Ellerslie, in the highlands of Scotland. Shortly after Dr. Malcolm Macfarlan came to Pennsylvania, he purchased a tract of land in Montgomery County and the home at 1805 Chestnut Street. In 1893, Malcolm Macfarlan purchased a "summer place" at 101 Church Road in Ardmore. The sale of this property was only its second land transfer since the original grant in 1783. It was in this home that Douglas Macfarlan died.

His preliminary education had been at the Friends Central and William Penn Charter Schools. He entered the College Department of the University of Pennsylvania, and in 1908 he was graduated with a B.S. degree. He then entered the School of Medicine of the University and was graduated with his M.D. degree in 1911. His brother, Donald, was graduated with him from the same medical school in 1911, and he is still surviving.

Dr. Macfarlan served his internship and several residencies at hospitals in New York City and at the Episcopal Hospital and Graduate Hospital in Philadelphia. He entered private practice in Philadelphia in 1913 and gradually began to devote more and more of his medical activities to the field of otolaryngology. He became head of the otolaryngological services at the Pennsylvania, Graduate, Presbyterian and University of Pennsylvania Hospitals and was an instructor, lecturer and associate in otolaryngology at the University of Pennsylvania School of Medicine for many years. He was associated with many nation-wide societies that dealt with the prevention of deafness. He devised and constructed numerous forms of technical apparatus for the testing of hearing, many of which have been universally adopted. He is credited with having established the "Speech-Hearing" testing clinic in the Philadelphia Public Schools. He was author of many articles in medical literature dealing with deafness. He was elected president of the Philadelphia Otolaryngological Society, and he later became chairman of the Section on Otolaryngology of The College of Physicians of Philadelphia. His association with organizations that dealt with problems of deafness—local, state and national—were too numerous to mention here.

Douglas Macfarlan was a thorough "Scots man". He was interested and active in many Scottish-American Societies and for two terms he was president of the St. Andrew Society of Philadelphia.

Medicine was Dr. Macfarlan's first love, but his intense interest in the history and geography of Montgomery and adjacent counties in Pennsylvania engendered other loves, which were drawing maps and writing the history of those areas. He was especially skilled as a "free-hand" artist in

* Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

his drawings of historic dwellings, places and people. Many of his drawings and articles were done in his home in Ardmore and are still in that home. Many are in the Lidington Library in Bryn Mawr and in the files of the Historical Society of Montgomery County, in the Lower Merion Historical Society and in the Canadian National Archives in Ottawa, Canada. Some are still on exhibition at the Valley Forge Historical Museum. His writings on historical subjects are numerous and pertain to many phases of American growth, especially to military episodes in Pennsylvania. Forty-seven of his articles are listed as having been published. His free-hand maps, relating to the Revolutionary War, were meticulously made, and many of them were transferred to projection slides for his lectures.

Dr. Macfarlan served his country well in a military capacity. Prior to the First World War, he had served two enlistments in the First Pennsylvania Cavalry in Troop "A". He was called to active duty three days after the declaration of war in April 1917, and he was assigned to the examination of troops for the Signal Corps in Pennsylvania, New York and the District of Columbia. He was sent overseas in August 1917 as a First Lieutenant in the American Expeditionary Forces, where he served on defensive sectors until November 1918.

He was commissioned a captain in the Medical Corps on November 14, 1918, and discharged from military service on April 27, 1919. Subsequently, he became post commander of the Keystone Cavalry Post and the Bullock-Sandnain Post of the American Legion. He was a long-standing member of the Pennsylvania Historical Society in Montgomery County. He founded and became the "permanent" president of the Lower Merion Historical Society.

The College of Physicians of Philadelphia has been honored to have had Douglas Macfarlan as a loyal Fellow for many years. He was always a diligent worker in whatever task was assigned to him by The College. He was a studious follower of the teachings of Aesculapius and he loved to teach and pass on his fund of expert knowledge to those about him. In the words of Chaucer, "He would gladly learn and gladly teach".

In the death of Dr. Douglas Macfarlan, The College of Physicians of Philadelphia has lost a loyal Fellow and friend.

Memoir of Harold Frederick Robertson 1900 1966*

By ELIZABETH KIRK ROSE, M.D.

HAROLD ROBERTSON was born on March 3, 1900, in Philadelphia, the son of a physician. He was educated in Philadelphia at Central High School and, after an interlude for collegiate studies at Wesleyan University, was graduated from the University of Pennsylvania School of Medicine in 1926. He was an intern at Philadelphia General Hospital, then practiced internal medicine, taught, studied and wrote here until his activities were curtailed by ill health about a year before his death on December 30, 1966, in California. During World War II, he served from 1942 to 1945 as lieutenant colonel in the Air Force and as chief of medical service and consultant of Southeast District A.A.F. at Orlando Army Air Base.

Harold Robertson was devoted to the practice and teaching of internal medicine. He was a diplomate of the American Board of Internal Medicine. An active member in the local, state and national organizations of the American Medical Association and in the American College of Physicians, he was elected a Resident Fellow of The College of Physicians on May 9, 1932. He was also an interested member of Sigma Xi. He taught variously at Temple University School of Medicine, Jefferson Medical College where he was assistant professor, and at the Graduate School of Medicine of the University of Pennsylvania as associate professor. His chief hospitals included Philadelphia General, where he had been president of the medical board and medical consultant to the neuropsychiatric service, and Methodist Episcopal, where he had been director of the department of medicine and president of the medical staff. He also had served as medical consultant at Wills Eye Hospital and at The Chevalier Jackson Bronchoscopic Clinic at Temple University, and he was on the visiting staff at The St. Luke's and Children's Medical Center. He was a member of the Physicians Advisory Board of the Blue Cross and of the Hospital Liaison Committee of the Philadelphia County Medical Society.

He enjoyed teaching others the science and art of internal medicine as he had been so inspired by his father, William Egbert Robertson, a prominent Philadelphia internist and teacher. With his father, formerly head of the department of medicine at Temple University School of Medicine, he was co-author of *Diagnostic Signs, Reflexes and Syndromes*, which he himself subsequently revised twice. He contributed to medical literature over 30 articles on various topics in clinical medicine.

He was industrious, gentle, dedicated, interested in the art and science of clinical medicine and its teaching. He is survived by his wife, two sons—one a teacher of biology and one a physician—and three grandchildren.

* Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

TRANSACTIONS & STUDIES

of

The College of Physicians of Philadelphia

Volume 35 (Fourth Series)

Number 4 (April 1968)

180th Anniversary Reception: President's Address

Invitations were issued by the Officers of The College of Physicians of Philadelphia to a reception and dinner on Friday, November 10, 1967, at six-thirty o'clock in the evening in the ballroom of the Bellevue Stratford Hotel. The dinner celebrated the 180th anniversary of The College of Physicians of Philadelphia. Attendance of Fellows and their wives and guests was 705.

PROGRAM

Invocation

The Right Reverend Robert Lyon DeWitt
Presiding Bishop, Episcopal Diocese of Pennsylvania

Toast to the College

Thomas Morton Durant

Divertissement

The Suburban Squires

Introduction of Honorary Member
Mrs. John H. Wintersteen
President, The Philadelphia Museum of Art

by Merle Middour Miller

Address

Francis Clark Wood
President, The College of Physicians of Philadelphia

Welcome, Fellows of The College of Physicians of Philadelphia.

Welcome, Our ladies who are with us tonight by the Divine Right of Queens.

Welcome, Mrs. John H. Wintersteen, our newly elected Honorary Associate—one of the most significant honors we can bestow.

Welcome, Friends, and among them certain key members of our staff who have

worked far beyond the call of duty to keep the College and Library functioning and growing.

I am glad you came. On this very evening, exactly 58 years ago, November 10, 1909, The College of Physicians held a dinner in this same hotel, the Bellevue Stratford, to celebrate the dedication of its "new building" on Twenty-Second Street.

I suppose we all have the problem illustrated by the letter I received from a good, honest friend in answer to my letter about this dinner. He wrote, "I am interested, but I am not sure I wish to attend another dinner." He didn't know what Paul Nemir and his Entertainment Committee were capable of. This certainly has not been "just another dinner."

Before I became President in January of this year, I had a vague idea that the College was a sort of self-perpetuating, rich, old institution whose affairs went rolling along without anyone doing anything very dramatic. Since January, I have looked over our affairs more carefully and have read a good deal of our fascinating history.

Tonight, I want to tell you some of the things I have learned, because learning them has stimulated my enthusiasm to quite a pitch, and I should like to infect you with my Bacillus enthusiasticus.

In the autumn of 1786, 181 years ago, a group of Philadelphia physicians decided to found this College. They met and elected officers. John Redman was the first President (Figure 1). He received his degree in Leyden in 1784, took part in the French and Indian War, and was preceptor to twelve young physicians, including John Morgan, Benjamin Rush and Caspar Wistar. He looks like quite a man and he must have been. He held this College together as President through its formative period for the first 19 years. He called the Fellows "my professional children."

On January 2, 1787, the year of the Constitutional Convention, 13 members held the first regular meeting of the College, in a building (Figure 2) which had been erected in 1712 as a tabernacle for the evangelist, George Whitefield. It was located at Fourth Street below Arch.

The Fellows adopted a constitution and got under way. Their objectives are stated in the little booklet you all received when you became Fellows. They were called upon repeatedly during epidemics to advise in matters of public health and public wellare. They helped establish the Board of Health of Philadelphia along sound lines and fought a number of battles to bring this about.

In 1791, the College moved its headquarters to a room in the building of the American Philosophical Society (Figure 3) and stayed there for 54 years. They furnished this room for $73 and paid rent of $23 a year. Subsequently, in 1800, the rent was raised to $10 and later, in 1813, to $50. During that time there were troubles and lean years and certain important accomplishments.

They fought with each other. It has been said that "our modern quarrels are mild compared to theirs, and they were much our superiors in expressing ferocity in stately diction" (Curtis).

Benjamin Rush resigned as a result of criticism of his heroic treatment of yellow fever. Some idea of his methods can be gleaned from a testimonial, published by Philip Syng Physick, the father of American Surgery, in the *Gazette of the United States,* September 14, 1797, concerning Rush's treatment of him. He says, "I take this method of informing my fellow citizens that I lost, during my late attack of that fever 176 ounces of blood by 22 bleedings in 10 days." (That is over 5 liters or about 1½ gallons.) He continues, "The efficacy of this valuable remedy was aided by frequent and copious evacuations of my bowels." (Rush used repeated doses of 80 grains of calomel plus jalap and rhubarb.) Dr. Physick attributed his survival to Rush's

FIG. 1. Dr. John Redman, the first President of The College of Physicians of Philadelphia.

efforts, and, since Rush resigned from the College because of criticism of his therapy, Philip Syng Physick never joined our ranks.

There were other troubles, reminiscent of some of our problems today. In 1821 the rent had not been paid for four years. Two hundred and fifty dollars were borrowed. In July 1823 the minutes state that "bills for fuel and rent, and the balance of the note with interest had been paid, leaving the College in debt to the treasurer $18.62." In 1827 the Fellows decided to change the time of their meetings from afternoon to evening. "In consequence," the minutes state, "the bill for rent included a charge of $6 per year for candles."

Then there is every indication that life began to come back into the College when the Fellows began to see some problems which they felt were their responsibility. The development of the United States Pharmacopoeia was spear-headed by this College, and we have played an important part in maintaining it ever since.

The Library was growing and needed larger quarters, so new space was rented at $175 a year in the Mercantile Library (Figure 1) at Fifth and Library Street, where it stayed for seven years, from 1845 to 1852. During that time (in 1849) a building fund was begun.

The College moved next to the Picture

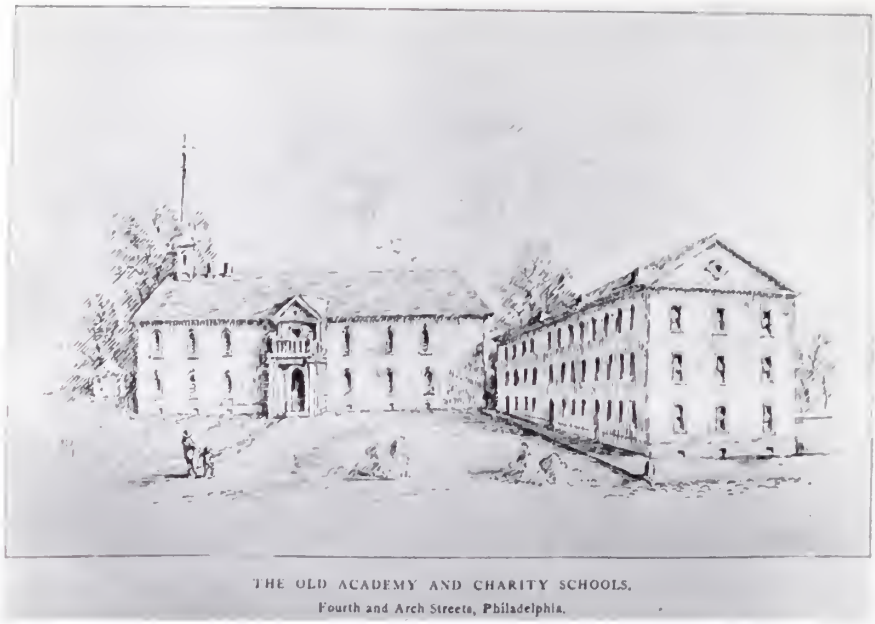


FIG. 2. First meeting place of The College of Physicians, Fourth and Arch Streets.

FIG. 3. Second home (1791–1845) of The College of Physicians, the hall of the American Philosophical Society.

House at the Pennsylvania Hospital (Figure 5), so called because it was built to house Benjamin West's pictures. The rent was $250 a year. They stayed there 11 years until 1863, when their first *own* home was completed at a cost of $40,000, at the northeast corner of Thirteenth and Locust Streets (Figure 6). This they occupied for 46 years. In 1909 they moved to our present building, which was built for $364,000.

Fig. 4. The Mercantile Library, Fifth and Library Streets, third home of The College of Physicians, 1845–52.

Since then, our major acquisitions have been: W. B. McDaniel, 2d, in 1933, Olga Lang in 1935, Ella Wade in 1939, Elliott Morse in 1949, Theodore Kolodziejski in 1961—a total of 111 years of dedicated service. Our debt to them and their staffs is beyond calculation. (Will you please stand and give us an opportunity to record our appreciation?)

Our building is essentially the same as it was when dedicated except for the important addition of our new stacks, planned and carried out in the 1950's by Presidents T. Grier Miller and Richard Kern. These new stacks cost $638,000—almost twice the cost of the original building.

During all this time, our Library has grown from its original 21 volumes, contributed by John Morgan in December 1788. Among these was one given him by the 82-year-old Morgagni in Padua on July 24, 1764. Here is that volume with a most flattering inscription by the author.

We now have one of the great medical libraries of America, and of the world. It contains 123 incunabula, those printed in the first 50 years of the printing press, before 1500 ("incunabula" signifying the

Picture House of the Pennsylvania Hospital, Fourth Home of the College, 1852–1863.

Fig. 5. Picture House of the Pennsylvania Hospital, fourth home of The College of Physicians, 1852–63.

cradle period). We have 240,000 volumes, over 300,000 dissertations and unbound pamphlets. There are more than 27,000 photographs, many from Dr. Samuel Sturgis. We receive over 3,000 serials. Over the years we have become an important source of medical literature for libraries all over the country. Last year we sent out 27,000 volumes to 300 different libraries in 33 states.

In the mid-1800's we acquired the Mütter Museum, which has become a remarkable collection of memorabilia. There are the walking canes of Benjamin Rush, Samuel D. Gross, Nathaniel Chapman (first President of the A.M.A.) and others; the jaw tumor of President Cleveland, and the sewing kit of Florence Nightingale . . . to name just a few.

We also have the botanical garden presented to us by Mr. E. B. Coxe in honor of Dr. Wharton Sinkler in the early 1900's.

We were doing quite well, keeping our heads well above financial waters until the 1940's. At that time our library budget was $38,000. Then the Scientific Information Explosion began. Our journal list has tripled. Our library staff has quadrupled. Our library salary figure has increased fivefold. Consequently, our library budget has sextupled in 20 years to $220,000. We have made major efforts to remain solvent. We have tripled our dues. They had been $30 a year. In 1949 they were raised to $50; in 1957 to $60; in 1964 to $90. We have raised $145,000 by S. Weir Mitchell Fellowships; but we have been running deficits periodically over the past 10 years, and our reserve fund has dwindled from $70,000 to $17,000. In 1965–66 our expenses were tabulated as $337,000 and our income as $319,000 ($18,000 short). One Fellow suggested that we close the Library to all but Fellows. If we did this, we could live well within our budget. We have other major problems: our dues are higher than they should be, and we have heard from some Fellows wondering what they were getting for their $90.

Thirty years ago our scientific meetings were among the few good ones held in Philadelphia and were well attended. Now, there are more good meetings in town than anyone can possibly attend. Moreover, most of our Fellows live in the suburbs. During 1966, our meetings were attended by from 55 to 201 individuals, not all Fellows. Then, in January 1967, we lost our parking lot across the street. One evening a few days after that blow fell, I was brooding over our problems when I thought of the poem by Arthur Guiterman:

> The tusks which clashed in mighty brawls
> Of mastodons are billiard balls.
> The sword of Charlemagne the Just
> Is ferric oxide, known as rust.
> The grizzly bear whose mighty hug

FIG. 6. The College's first home of its own, from 1863–1909, at Thirteenth and Locust Streets.

Was feared by all, is now a rug.
Great Caesar's bust is on the shelf,
And I don't feel so good myself.

But, Ladies and Gentlemen, this poem is not apropos. On closer scrutiny, a number of very encouraging features are visible. Before I ever came on the scene "the ball had started rolling."

A few years ago Dr. Jonathan Rhoads engineered the purchase of the Erlanger Garage behind the College to serve as space for building expansion. Then, Dr. Durant started our meetings at 5:30 instead of 8:30, after which there is a cocktail hour and dinner, where wives are invited with their husbands, so we don't have to go home to the suburbs and come back. Those members and wives who have discovered this are quite regular attenders and seem to enjoy the proceedings. You can park at 21st and Market, a square and a half away.

The Regional Medical Library Committee under John Huber has been meeting since 1962, and has become a very thoughtful, effective organization for formulating regional plans.

Last year, Richard Kern, John Gibbon, Elliott Morse and Samuel Radbill began overtures to the National Library of Medicine, and we have put in a grant request to them to become a regional medical library. Their project site visit was made six weeks ago and they seemed very interested in our application. I should explain that the grant request of nearly one million dollars for the next four years, if approved, won't save us any money—probably the reverse. It will be used for the purpose of *increasing* our responsibilities. However, if we receive it, it will add 18 people to our staff, and will enable us to do a number of things we feel we must do to increase our usefulness as a source of medical information to the region we will serve—all of Pennsylvania, Delaware, and Southern New Jersey.

Last year Dr. Gibbon appointed a Planning Committee with Dr. Pillsbury as Chairman, which has done some hard thinking about our problems and what we should do about them.

An outside library visiting committee of seven nationally recognized individuals is

being set up under the Chairmanship of Dr. George Berry to help us plan for the future.

A committee has been appointed to review and re-write our By-Laws, to bring them up to date, and to consider a variety of questions. For instance, should fellowship be opened to other groups not possessing the M.D. degree, whose interests, competence and objectives are similar to ours? Among others we are thinking of are teachers of basic science on medical school faculties. Also, we have in mind Doctors of Veterinary Medicine. Mark Allam, Robert Marshak and others on the faculty of the Veterinary School would add luster to our fellowship.

A committee is being appointed to estimate and plan our building needs over the next 10 years.

Fig. 7. Portrait of George W. Norris, M.D., 1875–1965, eminent Fellow and recent benefactor of the College. The original portrait hangs in the Norris Room on the second floor of the Library.

Now, I should like to sound several other optimistic notes:—We are not in the red this year. George Blumstein and his Finance Committee have performed miracles.

We have just been notified that we are to receive from the estate of George W. Norris a bequest of over $700,000 for our common trust fund. This is a picture I found of him as a young man (Figure 7). You may be interested in the genesis of this bequest. I looked into it and found that it occurred as the direct result of an intensive effort made 20 years ago by Drs. Miller, Kern and Schelley to remind all Fellows to remember the College in their wills.

The Council is now meeting at 4 p.m. instead of 5 p.m. and has more time to consider important matters. Their enthusiasm has led them to raise almost $50,000 as the beginning of a development fund, from their own purses, from their patients, and from two foundations. More may be in the offing.

With this we can begin to do some things that need doing.

We know what some of them are:

1. We must develop our administration if we are to handle larger responsibilities, especially if we receive the grant for (and designation of) a regional medical library. We need a full-time executive director before long, to be captain of the team. He must either be a physician or be closely related to medicine. He must understand finances and administration, but he must be very thoughtful and gentle about what he does. If you know such a person, please send him to see me. We don't want a hyper-efficient, cold-blooded person who will destroy the lovely atmosphere of the College and the loyalty and enthusiam of our wonderful staff.

2. We must tell the people of this community about the College in a dignified way. Most of them don't know we exist.

3. We must do some building. Our present thoughts are that we must erect a building next to the College, the lower floors of

which will offer parking, the upper floors to serve for offices and for storage of volumes not frequently used, both for us, and for other medical libraries in the area (as the New York Academy of Medicine has done).

4. We are re-planning our meetings, cutting their numbers somewhat.

There is one problem before us which has not been decided. Should we be doing anything in addition to exerting every effort to develop our Library and our administration to handle it?

S. Weir Mitchell, in his presidential address of 1888, said, "Our largest office should be that of incessant watchfulness of all public interests in which questions of health are concerned." We have largely abdicated our role of supplying initiative in this field since government agencies and organized medicine came into the picture, except when called upon to help solve some specific problem. Should we emulate the New York Academy of Medicine, whose committee on public health, with the adequate help of a full-time staff, plays such an important role in the health problems of the City of New York?

With this in mind, the Council and our Committee on Public Health decided this year that we should dip our feet into the edge of this pool.

The human race is undoubtedly messing up the world by polluting its air and water, by radiation, by the misuse of drugs, and by over-population (to mention only a few problems). We believe we should probably enter the lists, so we have scheduled two symposia on Saturday mornings. The first, in conjunction with the County Medical Society, was on a rainy Saturday morning, November 4, on the subject of Air Pollution. Mitchell Hall was nearly full. We are holding another on March 2, 1968, on Drug Addiction and Hallucinogenic Drugs.

We are perfectly aware that this is just a probing start in the direction of increasing our activities in behalf of the public welfare. Yet, the make-up of our fellowship leads us to believe that the College *could* exert *quite* an influence if we decided to put our full weight into these matters, with adequate staff and facilities, and also quite possibly into other problems, such as postgraduate medical education, education of the laity, and even that difficult but highly important field of how to stretch an inadequate number of physicians and nurses to enable them to give the proper medical care to our rapidly expanding population.

This College is particularly constituted to be able to do these things. It has an all-Philadelphia flavor and has no political affiliations. It provides a common, friendly meeting ground for all the medical elements and institutions of this community. No element has ever dominated its Councils, and all of us are dedicated to the preservation of this unique characteristic.

If we are actually going to consider doing these things I have mentioned, what is the mechanism by which you can make your voices audible? We have had no meeting like this in years. At the January meeting the President is supposed to give a report on the state of the College. Last year the audience at that meeting numbered 51. We could hold a dinner like this each year if you think well of it. I could write letters describing to you the problems and asking your views and your help.

From what has been said, it is perfectly obvious that this College is not a self-perpetuating, rich old institution whose affairs will go rolling along, without anyone doing anything very dramatic. You also realize that I feel this College is an entity well worth preserving and building, and that we are ready to take some rather dramatic steps forward. Those of you who share these sentiments can help immediately in the following ways.

1. Come and see the College, and read its history. We have set up a procedure for showing it to you if you will call the College office with even a small group in tow. We are collecting all the items dealing

with our history where you can find them. I'm not talking only to the Fellows, I'm inviting the Queens. What could you not do with your husbands if you got interested and enthusiastic! Come and see the College, feel it, and let its aura penetrate your soul as it has mine.

2. Any friendship, any human relationship, will wither if you don't make some effort in its behalf. Come to the College to at least one evening meeting this year, bring your wife for the cocktails and dinner. Put it down on your calendar now (December 6, January 3 or May 1). All such meetings in the last four years (except one) have been very interesting and informative, and I have reason to believe that all these will be good. You will learn something you need to know. Also, you will help relieve my embarrassment. It is ghastly to have a good speaker and a tiny audience. Even though we know we are very much alive, we don't want to appear too dead to our visitors and guests.

3. If you can, come to the symposium Saturday morning, March 2.

4. Think over our problems, and let us have your thoughts. We are particularly interested in getting the younger group of Fellows to express themselves and to get involved in our Councils.

5. There are many outstanding medical men in Philadelphia who are not Fellows of this College. This year I have identified a number of them. When I asked them if they would like their names proposed, I found that many of them would like it very much. They just had never been asked. You could help a great deal in this regard.

Your officers, Council and committees also have a major responsibility. It is our function to study our problems thoroughly, to make plans deliberately, to present to you a well-ordered program of moves we must consider, and to obtain your views upon these questions. We must not go into action until we know exactly what we want to do.

HOME OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.
Dedicated November 10–11, 1909.

FIG. 8. The present building of The College of Physicians of Philadelphia, which was dedicated November 10–11, 1909.

I should like to say, I take all of this not as a "dour duty" but rather as some exciting fun, a chance of satisfying the urge we all have to do something worth doing.

Well, that is the picture. Here is our present home (Figure 8). It and its contents are valued at $1.5 million (not including the immense value of our first-rate Library). Our trust funds of all sorts (including a fair number of restricted gifts which we can't use freely for ordinary expenses) amount to $1.9 million. Thus, we Fellows (about 1100 of us) own a concern worth well over three million dollars. We also possess a great heritage from the past; and in the present we have the loyality and enthusiasm of a wonderful staff.

I said we own all these things, but I should like to qualify this statement. We have *inherited* them. Goethe once made a remark which struck me as very apropos as I was thinking about the College: "What you have inherited from your father, you must earn before you can possess it."

Air Pollution: A Community Health Forum[1]

The James M. Anders Symposium[2]

Chairman

FRANCIS C. WOOD, M.D., *President, The College of Physicians of Philadelphia*

Moderator

LEROY E. BURNEY, M.D., *Vice President for Health Sciences, Temple University, Philadelphia*

Participants

RICHARD L. RILEY, M.D., *Professor of Environmental Medicine, School of Hygiene and Public Health, The Johns Hopkins University, Baltimore*

GORDON LARSON, *Head, Environmental Resources Center, Operations Research Laboratory, The Franklin Institute, Philadelphia*

AUSTIN N. HELLER, *City Commissioner, Department of Air Pollution Control, New York City*

(*Dr. Wood*) Ladies and gentlemen, welcome to the James M. Anders Symposium.

This has been planned and organized by our Committee on Public Health and Preventive Medicine with Dr. Elizabeth Kirk Rose as Chairman.

In 1787, 180 years ago, the year of the Constitutional Convention in Philadelphia, when this College was founded, no other watchdog for the public health was on the scene and the college played a very important role in public health matters. As the years went by, government agencies and organized medicine gradually took over most of these responsibilities. Yet the College has always been ready to step into any breach that appeared in the ramparts, defending the public health. Today, The College of Physicians of Philadelphia, the Philadelphia County Medical Society and 11 cooperating organizations are joining forces to do battle with one of the great enemies of the public health, which seems to be gaining the upper hand, namely, the pollution of our air.

The County Medical Society has been in the thick of this battle for some time and I would now like to introduce Dr. John Blady, their President, to say a few words.

(*Dr. Blady*) Dr. Wood, Dr. Burney, distinguished guests, ladies and gentlemen, I think the forum today is an indication of the medical profession's concern with this problem and the County Medical Society is very happy to be a co-sponsor. I am not going to belabor anything else because we have a very fine program to listen to.

(*Dr. Wood*) Now the meeting will be turned over to our moderator, Dr. Leroy E. Burney, Vice-President for Health Sciences of Temple University, who is particularly prepared and qualified for this function by

[1] Presented by The College of Physicians of Philadelphia and the Philadelphia County Medical Society at The College of Physicians of Philadelphia, 4 November 1967.

[2] James M. Anders Lecture XLVII, The College of Physicians of Philadelphia, presented as a symposium.

his past experience as Surgeon-General of the United States Public Health Service. Dr. Burney.

(*Dr. Burney*) Thank you, Dr. Wood. Welcome to all of you on this beautiful sunshiny morning* in Philadelphia. We were commenting whether this kind of atmosphere would not only invite some air pollution but also increase the audience that we had here this morning, since golf and gardening were precluded by this kind of weather. I am sure you would want to join me in commending our Philadelphia College of Physicians, particularly Dr. Wood and Dr. Rose, who have taken such an active part in initiating this activity, and also to commend the County Medical Society and the many other voluntary groups in the community, including our universities, for jointly sponsoring this very important subject here this morning. Actually the strength of the meeting is engendered by the wide variety of groups who have an interest and have agreed to participate in this activity.

What we would like to do here this morning with the three very distinguished gentlemen who are experts in this particular area is to give each one an opportunity to present in about 10 or 12 minutes a little lead-off statement summarizing his major concern in this whole field. Then we will proceed to provide questions to these gentlemen from the lists that each of you has submitted, but this does not preclude questions from the floor. And then we will have a little intermission, and I am told by Fran that there are cider and doughnuts on the floor below, so we will have a little physical and mental pause that refreshes somewhere in the middle of the morning. After an intermission, we shall continue the questions and then give our panelists about 30 minutes to summarize the issues and suggest a plan of action for Philadelphia and the Delaware Valley region in the whole area of air pollution.

* Heavy fog and rain characterized the morning in Philadelphia.

So what we want to do here this morning in these presentations, in the questions, and in the planned summary, is to define the problem or issues as they see them, and as you see them, to interpret some of these, and then to propose a plan of action which we may follow through in the weeks and months ahead. I also suspect, Dr. Wood, that you would like to have suggestions as to how the Philadelphia College of Physicians may continue to provide leadership in being a catalyst for so many groups who are interested and concerned and who have a responsibility in this area.

The first speaker will be the Professor of Environmental Medicine at The Johns Hopkins University School of Hygiene and Public Health in Baltimore, and his subject will be "The Health Effects of Air Pollution." It is a pleasure to present Dr. Richard L. Riley.

The Health Effects of Air Pollution

(*Dr. Riley*) Dr. Burney, ladies and gentlemen, in order to give an authoritative statement on the health effects of air pollution, I shall refer to the report of the Panel on Environmental Health Problems of the President's Scientific Advisory Committee. The reasons given in this report for concern about air pollution are more subtle and less medical than those that sometimes appear in the press and on television. I concur with this emphasis and since the words of the report are carefully chosen, I shall read some of them, as follows:

"Pollution affects human health and comfort in a number of ways. Under some circumstances, fortunately now rare, it brings overt clinical disease or even death. More commonly, however, it produces lesser effects, such as difficulty in breathing and impaired lung function from inhalation of polluted air, irritation of eyes, nose, and throat, unpleasant tastes or odors, psychological or behavioral effects."

One section of the report deals with ex-

cessive air pollution for short periods and acute episodes, and says:

"Hazards from atmospheric pollutants have been demonstrated most vividly in episodes of acute exposure. There are many reliable reports of individuals and small groups made ill and even killed by occupational or accidental exposure to toxic fumes, vapors, pesticide aerosols, smoke, or high concentrations of dust. A few community catastrophes have resulted from combinations of fog, temperature inversion and air stagnation, coupled with unusually large amounts of ordinary combustion-produced atmospheric pollutants. In these rare but tragic episodes, fatalities occurred predominantly among the elderly and those with pre-existing cardiac or pulmonary diseases."

A later section deals with prolonged exposure to ordinary urban air pollution, and here it says:

"While we all fear and many believe that long continued exposure to low levels of pollution is having unfavorable effects on human health, it is heartening to know that careful study has so far failed to produce evidence that this is so, and that such effects, if present, must be markedly less noticeable than those associated with cigarette smoking. Attempts to identify possible effects of ordinary urban air pollution on longevity or on the incidence of serious disease have been inconclusive. Special attention has been focused on lung cancer, which is known to be closely associated with tobacco smoking, and with the inhalation of radon, other radioactive materials, nickel carbonyl, chromates, asbestos and other chemicals. There are consistent findings of a greater incidence of lung cancer in the cities than in the country, and it is possible that urban air pollution is a contributory factor in this disease, but its role is uncertain except in special situations, such as proximity to industrial plants that handle known carcinogenic materials. Urban atmospheric pollution can aggravate asthma and some other chronic respiratory illnesses and can cause transient eye and respiratory tract irritation. Evidence from animal studies suggests that exposure to air pollution may increase susceptibility to pulmonary infections. . . .

"Air in some of our cities is unpleasant to breathe and obscures our surroundings; our buildings are dirtied and sometimes rapidly weathered. Pollution has denied to some of our farmers the most desirable uses of parts of their lands. Prudence and self-interest dictate that we exert ourselves not only to prevent further build-up of pollutants but to reduce present burdens of pollution in our air, our waters, and our land. . . .

"We now know that the full effects of environmental changes produced by pollution cannot be foreseen before judgments must be made. The responsible judgment, therefore, must be the conservative one. Trends and indications as soundly based as possible must provide the guidelines. Demonstration of disaster is not required."

Among the principles enunciated by the Environmental Pollution Panel were the following:

"The public should come to recognize individual rights to quality of living, as expressed by the absence of pollution, as it has come to recognize rights to education, to economic advance and to public recreation. Like education and other human rights, improved quality of life from reduced pollution will be costly to individuals and governments."

These statements are meant for an educated public that can see the force of the arguments and is capable of choosing priorities with intelligence. The statements do not indulge in scare tactics with implications regarding health hazards which go beyond present evidence. The emphasis is on the diversity of effects on the plant and animal kingdoms, and health is visualized in broad perspective. The quality of life, including its aesthetic values, is unblushingly given high priority.

At one point the report makes a rather challenging statement: "Demonstrable threats to human health constitute a small part of today's damage from pollution."

With the health effects of air pollution thus put in perspective, let us examine that small part of today's damage from pollution. What are the trends and indications? The trends are that urban air pollution is increasing as urban concentrations of automobiles, power plants, dwellings and factories increase; that cigarette smoking continues at a very high rate, and that chronic lung disease is increasing very rapidly indeed. I am speaking of a factor of 10 times over the last couple of decades. With respect to chronic lung disease, all three—chronic bronchitis, emphysema, and lung cancer—are participating in the increase. Epidemiologic studies have shown beyond doubt that the increase in these lung diseases is causally related to cigarette smoking, which is a form of personal air pollution. Epidemiologic studies have not yet demonstrated conclusively that urban air pollution causes chronic lung disease, but the evidence points in that direction.

Like smoke from a cigarette, urban air pollution arises from incomplete burning. The major sources are automobiles, manufacturing, electric power generation, heating of buildings and burning of refuse. The different fuels and varying efficiencies of these processes produce pollutants which vary in chemical composition. Common to most pollutants are sulfur dioxide, carbon monoxide, hydrocarbons, oxides of nitrogen, and particulate matter. These constituents arise in varying proportions and are accompanied by many other chemicals in smaller amounts. They have complicated interactions with one another, and in the presence of sunlight may produce smog of the Los Angeles type. The air pollution over any big city is a mixture from many different sources. A common characteristic of these mixtures is that they irritate the respiratory tract and other exposed membranes. This leads to smarting of the eyes and inflammation of the nose and throat. Attacks of asthma may be brought on in people who are susceptible, and even healthy people have slightly increased resistance to the movement of air in and out of the lungs. During acute episodes, when the concentration of irritating substances is exceptionally intense, people with advanced heart and lung disease may die, as demonstrated in the classical disasters in the Meuse Valley in Belgium in 1930, in Donora, Pennsylvania, in 1948, in London in 1952 and 1962 again, and in more recent episodes in this country and elsewhere. All of this is relatively straightforward and obviously objectionable, but the deaths occurred in people who were already severely ill and the effects upon the rest of the community are easily forgotten. When the smog goes away, everybody feels better again.

For those who are responsible for the health of the community, the problem does not go away. Scientists look at the close association between air pollution and chronic lung disease. They see that both are increasing rapidly and many strongly suspect that in some way or other there is a cause and effect relationship. They are becoming increasingly aware that health can be affected in unsuspected ways by interactions between such factors as air pollution, temperature and humidity, respiratory infections and emotional states. There is a possibility that people can adapt to air pollution much as they adapt to high altitudes, but there is a greater possibility that the cumulative effects of air pollution, both in smokers and non-smokers, contribute to the increasing prevalence of chronic lung disease. Because the most serious effects are delayed, we cannot expect to know now what troubles may already be in store for us 20 years hence. If air pollution were eliminated today, its effects might linger on for a generation until those already exposed die off. We can be sure that the problem will not stand still while we study it, and that air pollution

will increase unless we take vigorous steps to stop the trend. Air pollution is related to things of which Americans are traditionally most proud: big cities, big industries, big highways and big automobiles. If our cities are to be worth living in, we must change our priorities, giving more emphasis to health in the broadest sense, including aesthetic values which improve the quality of life. It would be foolhardy to neglect the air pollution problem, thus denying ourselves the obvious benefits of clean air, simply because disastrous medical consequences have not yet been proven.

(*Dr. Burney*) Thank you very much, Dr. Riley. The next gentleman, who is one of the home folks here now, although he has had an active part and leadership in the direction of environmental health, and particularly air pollution, throughout the country, is now in charge of the environmental services at the Franklin Institute. His subject this morning will be "Deficiencies in Air Management Programs." It is a pleasure to introduce a present Philadelphian, Gordon Larson.

Deficiencies in Air Management Programs

(*Mr. Larson*) Dr. Burney, fellow panelists, as in most fields where the people working in them develop certain pat phrases and clichés, we have a number of them in the air pollution field. For example, many industrialists say, "You can't be against air pollution control because it's like being against motherhood." And we have the old matter about the weather, that "Everybody talks about it and no one does anything about it." You who are here who have heard me tell this story I am going to tell now, please forgive me, but I like to use it in a public audience, because one of the great problems is sorting out the truth and getting some handle on the problems that we have to deal with in air pollution. There are many exciting statements made in the press which tend to over-simplify the problem, and it is very difficult to define fact or separate fact from fiction. It is very much like the conventional tales of fishermen and their exaggerations. Now these two friends, who had been fishing companions for years and always had good stories to tell, couldn't go on this particular trip together, so the next time they met Bill said to John, "My last trip out there on the lake was the greatest one I ever had. I got a 30-pound trout." John looked at him a minute and said, "Well, you know, I was on the same lake last week, and I had the most unusual experience I have ever had in fishing. I fished all day, and finally near the end of the day I had something on my line, and I pulled it up, and what do you think, I had a lantern and it was lighted." Bill looked at him and said, "Now I've heard lots of stories about fishing, but I've never heard this one before. And it's just not the truth." And John said, "Well, Bill, if you'll take a few inches and a few pounds off that trout of yours, I'll turn out the light in the lantern." We have some lights to turn out and also some lights to turn on as we move forward in the field of air pollution.

I'd like to begin today with a little understanding of the term "air wastes" and the term "pollution of air wastes." The activities of our society are such that the air around us is a natural receptor for waste products. These products don't become pollution until some adverse effect has been experienced from the wastes that are discharged into the atmosphere. The air has a certain amount of ability to accept waste products and it depends upon the quality and the quantity of the materials introduced into the air. A burning dump located miles from any inhabitant could hardly be termed as a polluter, but if you live next door to it, it becomes quite a different subject. Within a small town, one single factory may be a serious polluter of the atmosphere. Also, in connection with defining "pollution," relative to whether it is waste or not, varying weather conditions will change the

effects from hour to hour so that the frequency of adverse reactions becomes an important factor in separating air wastes from air pollution. This problem becomes much more complex when the total amount of air waste generated in a metropolitan area becomes objectionable, and under these circumstances we encompass almost all of the activities of man and have to look at each of these when we consider wastes in the air as against pollution in the air. The automobile, solid waste burning in thousands of apartment houses or dumps, manufacturing processes, fuel burning, all combine to suggest adverse effects on persons and property, and frequently no distinction is made regarding what is acceptable or what is unacceptable in air waste. There seems to be little doubt that the management of air waste is the responsibility of government, and the responsibility for determining pollution as against air waste certainly falls upon the technical people involved, and the final decisions have to be made within the framework of government operations. From the state and Federal point of view, defining pollution and the polluter must take into account the small and the isolated pollution problem, distinguish between acceptable waste and pollution for heavily populated areas, and determine when air waste may become pollution in developing areas which are to receive the predicted growth which we face today in our nation. Since everyone contributes to air wastes, we may all become polluters, depending upon the role we play in providing the ever-expanding efforts for products and comforts of our modern society. I hope, therefore, that in our discussions today we will all keep in mind that no distinction exists between industry and individuals, and that we will not focus our attention upon a single form of air pollution, but rather accept the premise that air management programs in Pennsylvania must be developed to look at air wastes in terms of effects for each section of the state. We should, in our thinking today, progress beyond the stage of indicting and blaming one single air contaminant or one single segment of industry as the sole cause of air pollution. The individual citizen, the factory and its employees, the commercial and industrial activities producing products, the elected officials, governmental bureaus, educators, scientists and engineers, all have a responsible role in air pollution control.

In regard to our local situation, those of us working in this field recognized that pollution in the Philadelphia area and its surrounding regions had not been clearly defined in the past years, and yet we were well aware of the Federal government's activity over the past five years to stimulate air pollution studies and to stimulate action in local government at the community level. Consequently, early this spring a group in the Philadelphia Chamber of Commerce finally got together and decided, "Let's take a look in our area and see what's going on." From the newspapers, we learned that the Federal government had given some money to the Philadelphia Air Pollution Department, and there seemed to be a number of things going on that were somewhat uncoordinated. An active group within the Philadelphia Chamber of Commerce was taking an interest. (I might add that the Philadelphia Chamber of Commerce represents commerce and industry in a 6-county area and even part of New Jersey, so that its membership is very broad and, in a sense, it attempts to represent the entire region.) After very active study, in which I must say I was surprised to find people so willing to give their time to look into what was going on in our region, we produced a report in midsummer which pointed up four very specific things of concern in this area.

Our first concern was that air pollution regulations of the City of Philadelphia should be reviewed. Our second concern was that expenditures for various control agencies in the region were all inadequate to deal with the problem and that salaries,

types of agencies and programming were completely inadequate. Overlapping studies were in progress through the efforts of different agencies, we observed, and there was no interest in coordinating these efforts throughout the region. Finally, no governmental concept existed for dealing with air pollution in this area on a regional basis.

This document was widely distributed to all agencies involved in Pennsylvania and New Jersey, to the Governor's office, and to other chambers of commerce, with the hope of getting critical comment or maybe dissent from our judgments. We received none of these. We were hopeful that making these observations would stimulate more action towards coordination, revision of structure, and preparation to manage the program in the Philadelphia area. Within a very short span of time since this report, I can report to you today that some activity is going on to correct the areas of deficiency which the report indicated.

First of all, as regards assessing contaminants in the air in the Philadelphia region, the Federal government has sent a team here and, over the course of the next year, will establish numerous air sampling stations in order to assess the air pollution values that occur throughout not only the City of Philadelphia but its surrounding area. The State Air Pollution Department will be cooperating with this and will establish two of its own stations. These new stations, coordinated with the two that are now existing in the city, will, in the course of several months, help to define more clearly what is in the air in Philadelphia.

Secondly, the Federal government has made a report to the City of Philadelphia, based upon requests of the Mayor, and has made recommendations as to the kind of staff, the kind of organization, and the amount of money needed for carrying out a good air management program in the Philadelphia area. This has been widely reported in the press and, after the election is over, I am sure that, regardless of what administration is in, the intent is to reorganize to some degree the city air pollution control department and attempt to staff it properly and give it a budget. I would like to tell you very clearly that in the 15 years that Philadelphia has had an air pollution control department it has not been adequately budgeted and it has not been adequately staffed, and the reason is that the public has not been concerned with air pollution control in this area and has not supported any administrative procedure in dealing with the problem on a more intensive basis. This does not mean that the air pollution department of the city, which operates under the Department of Health, has not been doing a good job within the framework of their legislation, the laws that are on the books, and have conscientiously done the best they could within the limitations put upon them. The final area which now needs study and which will be dealt with on a broad basis by Mr. Heller is the mechanisms and the manner in which a regional approach can be taken.

I shall now conclude with one thought. Around the Philadelphia area is probably the finest suburban community existing anywhere in the United States today around a large metropolitan area. In any direction you wish to go, to the north, or west, is a beautiful suburban area adjusted to the economy of Philadelphia, and which, in the next 30 years, is going to be completely inundated with population and industry. There exists no formula by which these communities can be assured that, as they grow, pollution can be minimized. Pollution cannot be eliminated or prevented completely, but there does not exist today in the region or through state activities in air pollution control any control which would assure these communities the best protection for the future. Time is very short. Yesterday, the Chamber of Commerce Pollution Committee decided that our next basic effort would be to endeavor to create a study group which could look into the various

possibilities of how a regional air management program would be put together within the framework of government structure. Whether this is to be done by contract, or whether new laws are to be passed, nobody knows. The point is to get busy and start studying how it might be done. It goes without saying that these first efforts of the Chamber of Commerce need to be supplemented by any and every group in the Philadelphia region which is interested in the future of air pollution control in this area.

With that, I'll conclude and hope that some questions are developed from some of the things I have said. Thank you very much.

(*Dr. Burney*) Thank you, Mr. Larson. Philadelphia has a suburb, as Mr. Larson mentioned. One of these is a suburban area about 90 miles northeast of Philadelphia. In our usual enlightened approach here in Philadelphia, we seek advice and consultation from our friends and neighbors, regardless of from where they might come. One of these friends is with us here this morning. We are very pleased to have the Commissioner of Air Pollution Activities in New York City, who is going to discuss "The Environmental Overview." It's a pleasure to present Mr. Austin Heller.

The Environmental Overview

(*Mr. Heller*) Dr. Burney, distinguished members of the panel, I am, indeed, honored to be invited today and to be given this opportunity to share with you some of our experiences. I might say I am not exactly unfamiliar with Philadelphia, having visited the city periodically for 10 or 15 years, and I think I know something about your air pollution problems here, having sat, one might say, not necessarily on the other side of the fence, but having been associated with one of its problems in the past. I was delighted to listen to your story, Gordon, about the lamp and the light, and am very happy to hear that you have suggested that the light be turned on because I think one of the real tasks that we have, all of us who are here today certainly, is to be a lamp-lighter. This is an activity where lamp-lighting is, in my judgment, a necessity, and I want to talk to you a little bit about how one might go about being a lamp-lighter.

Judging from the prepared questions your esteemed associations have put to me, I feel a bit like the patient who presumes to prescribe for his physician. I am often asked to comment about the medical effects of air pollution levels on our citizens. Fortunately, I have many friends in the medical community, friends who are assisting me in both an official and unofficial capacity, to whom I can refer such inquiries. We in New York have established a close working relationship, and I am pleased to see today that you are doing the same here in Philadelphia. The very fact that you invited me, a chemical engineer by profession, to address you, illustrates the cognizance of a closer relationship among different disciplines, which is mandatory to meet today's environmental and health needs.

The issue to which I wish to address myself, but briefly, is the ever-present need for interrelating the physical, health and social sciences to the environment and the necessity of closer cooperation with their many respective disciplines and talents. Now, man in our urban society has only recently become specialized. It is a process that probably began with the Industrial Revolution and with the resultant urbanization. There are two phenomena which may also be the root cause of the environmental troubles today. The frontiersman usually enjoyed a generous supply of land, air and water to dispose of his waste, but urban industrialized man in ever-increasing numbers has placed such a severe demand on his environment that he is now affected by excessive noise, traffic, congestion, severe refuse disposal problems, and certainly atmospheric pollution from his heat and

power needs alone. For our sophisticated, technological society we have begun to break down functions into a multitude of narrow disciplines, a situation which without communication can ultimately only produce chaos.

Look, if you will, at the construction of the symbol of the modern city, a single skyscraper, and at all its repercussions on the environment. The construction of this modern skyscraper will affect air pollution in terms of the disposal of the existing structures, will probably have some effect on on-site pollution during the period of construction, and will certainly have an effect with respect to the quality of fuels used once the building has been completed. That same building will affect the energy demands of the utilities. It will affect the water supply and perhaps even the quality of that water supply. The building will disgorge thousands of office workers, at peak hours seeking luncheon facilities and at the end of the day transportation to their homes. Tons of refuse will have to be carted away each day contributing ultimately to the problems of traffic, solid waste disposal, and certainly air pollution. A side effect of this building may be its aesthetic contribution or, in fact, perhaps its negative impact on the surrounding area. Another consideration may be the relocation of the previous tenants. All these problems and questions should be thought through before one new building is constructed, but they are not.

We seemingly have our disruption because those involved in construction and its consequences rarely communicate, partly because of lack of regard, partly because of lack of direction, partly because of lack of a common meeting ground, and probably largely because of the difficulty of understanding one another. Then again, where are the environmental objectives stipulated? These problems are, of course, compounded when many buildings are built. Then the very meteorology of the climatology may challenge us. We are certainly finding this to be true in our large urban centers of today. The numbers become so complex they must be described by computers and statisticians. The air must be analyzed by chemists. The regulation must be enforced by specially trained field officers. Economists are challenged; engineers, architects, city planners and all levels of health personnel must be mobilized. A program of amelioration of our environment, therefore, calls upon the talents of the widest imaginable spectrum of specialists.

Our need is exacerbated (this is usually a pretty good word in a medical community) by the urgency of the problem. We cannot wait to train our ideal urban scientist. We must deal with the men at hand and ask these men with patience and with imagination to communicate effectively. But while we are communicating and solving today's problems, we must also be setting down the guidelines for those who are now being trained for the increasingly complex urban life ahead.

My exposure to these urban problems leads me to suggest, if I may be so bold, that perhaps a different path of educating a man in the environmental sciences should be taken. The traditional method is to begin with a broad base of liberal and generalized information, and then to work upward, applying more and more specialization until reaching a pinnacle—let's say, a Doctorate of Philosophy or Doctorate in Medicine. For want of a more graphic terminology, I call this method of educating and training "the pyramid." This pyramid form of education is a 19th Century hang-over, which is an outgrowth of the idea that all men must be humanists and even romanticists first. This type of training I feel is inappropriate to today's needs. Because of the complexity and interrelatedness of the environmental and social sciences, we cannot afford the luxury of having specialists at the peaks of their respective pyramids who cannot touch base with other specialists. By the same token, the jack of all trades with Lord

Byron's "smattering of an education" is unprepared to meet the challenges of today's environment. The type of man we need in the environmental sciences must begin with a broad base of knowledge and then become a specialist. Once he has acquired the depth of knowledge of a particular profession or speciality, he must, with continued education and experience, broaden himself so he can recognize how he can contribute to the problems besetting urban environment. This type of education I like to call "the hour glass" for it begins with a broad base, narrows to specialization and depth, and then flares out. This man must be flexible enough to meet the overlap of problems within the field of environmental control. If he is multi-disciplined and can cope equally with quantum physics and chemical engineering, so much the better, but the important thing is that he have the breadth to apply the specialty that he has learned within the broad and complex range of environmental problems. The medical profession has already pioneered in this type of "hour glass" education. During the last eight years, the number of continuing medical education courses has almost doubled and for the 1967–68 academic year more than 1800 courses are being offered to physicians throughout the nation by medical schools, hospitals, county medical societies and community health agencies. Particular reference must be paid to the work in continuing education that has been done by the American Academy of General Practice. Another medical development, the Heart Team, is a highly successful solution to this problem of communication among specialists. Each member of the Heart Team has a specific area in depth competence. It can relate and communicate with any member of the team.

It was in the hope of increasing the availability of "hour glass-trained" people in the environmental field that the Department of Air Pollution Control in New York City moved to the physical setting of the Engineering School of Cooper Union, a highly regarded technical institute. For example, professors on the staff of Cooper Union are tackling problems like the recovery of escaping energy in power plant stacks to provide additional sources of power. Engineers of many corporations will probably end at Cooper Union to pursue graduate degrees while relating their studies to problems confronting our department. We, on the other hand, are participating in research projects being conducted by the newly formed Air Pollution Epidemiology Research Unit at the Columbia University School of Public Health and Administrative Medicine, the New York University School of Engineering and its Department of Environmental Medicine, Brooklyn Polytechnic Institute and the City University of New York. To establish better communication between working professionals in other fields and our own environmental control program, we have established a Medical Advisory Committee and a Meteorological Advisory Committee. The Medical Advisory Committee, for example, is developing a system for monitoring hospital admissions to be correlated with air quality information. They will also study the relationship between the levels of carbon monoxide measured at critical points on city streets and the levels of carboxyhemoglobin in people exposed to those levels for extended periods of time. Now the exchange of information of first-rate minds in an unprecedented range of specialties is developing the necessary program to bring about a reversal of our current environmental deterioration. It is because of this fact that people like you are coming together with people like us up here, and this is happening across the nation. The real breakthroughs in environmental control are emerging. This exciting prospect results when men of solid scientific background cross the territorial boundaries of their disciplines, and, with mutual respect and with enthusiasm, tackle the problem that demands the talents of each.

You can continue this crucial dialogue in your own communities. I trust you will seek out those who must manage the environment and offer your services where they are so greatly needed. The knowledge you, in turn, gain from them will promote your understanding, but the ultimate beneficiaries will be the environment, you, your patients, and the patients we hope you will never have.

(*Dr. Burney*) Thank you, Mr. Heller. I think we can all understand now why New York City has developed such an outstanding air pollution program, although Mr. Heller admits that he is not so far along as he would like to be.

Questions

(Questioner from the American Institute of Architects) *Do we currently have the technical ability to reduce pollution from industry and vehicles? If not, what is needed to obtain this ability, and, if we do, how do you propose to make reduction of pollution mandatory?*

(*Mr. Heller*) Let me re-state the question so that we understand each other. This has been my point, you know. The question really is, "Do we have sufficient or adequate technical information which will allow us to solve problems related to industry and related to the automobile exhaust?" Have I stated that properly?

Now, when you talk about industry, of course, you're talking about a very wide, broad, variable type of problem, and one cannot readily address one's self to the word "industry" *per se,* but let me talk about one phase of the industrial segment which is common to all urban areas in terms of what we can do, what we have done, and what we are likely to do in the future. Let me talk at this time about power generation.

Power generation, in terms of the air pollution problem, is related to the types of fuels that are burned. If you burn coal, you have one type of problem; if you burn oil, you have a common problem, yet unrelated; if you burn gas, you have a different problem. If you generate your power through the technique of nuclear fission, then you have another type of problem, perhaps, and if you manufacture power on a hydro basis, then it is something else again. But let's get down to cases in our urban area right here in Philadelphia or New York City. Here we are burning fossil fuels—I'm talking about coal, oil and gas. Now with respect to gas, and this is the easiest one for me to address myself to, there is practically no sulfur in natural gas, so when you burn it, it's a clean burning fuel so that there is no sulfur dioxide, which we are concerned with in many of our urban communities. There is no dirt or particulates involved with the burning of natural gas, so one might say this is seemingly an answer to some phase of our air pollution problem. But when you burn natural gas, you do produce other components. It is not a pollution-free fuel; namely, you are going to produce oxides of nitrogen, which you do whenever you burn any fuel in the presence of air. However, at the present time we have not directed our attention in the urban areas on the east coast to the seriousness of oxides of nitrogen in our atmosphere, so if you will allow me, I will now just back off a bit and address myself to the key question of too much in the way of sulfur dioxide, too much in the way of particulates, and what can we do in the way of power plants? If we have to burn fuel oil, then we are dealing with the question of the sulfur in the fuel oil. If you reduce the sulfur content of fuel oil, you reduce the amount of sulfur dioxide emitted into the atmosphere. Now this is also true with respect to particulates, and here I am talking about the burning of coal. When you burn coal which contains an equivalent amount of sulfur, let's say, on a B.T.U. basis, you'll be producing sulfur dioxide again, so if you want to reduce the amount of

sulfur dioxide emitted into the atmosphere, you need to reduce the sulfur in the coal, but when you burn coal, and you can burn it a number of ways, you are always dealing with the question of particulates in that gas stack. Stack gas will contain too much in the way of particulates. Now there are means of controlling particulates, satisfactory technical ways which are operational today. One can use either an electrostatic precipitator alone or a mechanical collector combined with an electrostatic precipitator, depending on what performance requirements have to be. There is good evidence that, if you have a mechanical collector and electrostatic precipitator, you can achieve at least 99% removal of particulates from a coal-fired plant, irrespective of the type of furnace that you use. There is a wet bottom or dry bottom type, or what we call a "dry bottom furnace." It doesn't make any difference. The control device, the technology, is here to control the particulates and to control the sulfur in the fuels and, hence, the sulfur oxides.

Now this would seem on the surface to be a rather easy way to arrive at your target, but it is really, in fact, not so. The availability of natural gas for power plants is extremely limited, and those who have been dealing with the problem know this to be the case. Natural gas' preferential use is for space heating, not for power plant generation of electricity, because it is an asset that must be preserved and handled accordingly. And, if you have to burn oil, the question is, "What is the availability of low sulfur fuel oil?" and I am talking about, let's say, 1% sulfur or less in fuel oil. This is not readily available today. I would expect it will become more so in this area within the next one or two years, because naturally occurring fuel oil or the residual fuel oil that is brought into the market place here may vary anywhere between 2% and 3.5% in sulfur. There are some process technology developments which allow you to remove the sulfur, but this is not yet commercially feasible. Hopefully, it will be so in the next couple of years, so when you ask the question, "Can you reduce the sulfur?" the answer is, "You probably can." If the question is, "Is there fuel oil available in sufficient quantities to meet the needs of low sulfur content?" it has been my experience up to now that this is not the case. It is not available, but it will become available, so may I say with respect to an industrial area, there is, in many cases, sufficient technology to solve the air pollution problem. It is not a simple direct answer. I merely use the power plant as one single illustration.

When you come to the automobile exhaust, you have a different problem once again. There has been at least 15 years' research in an attempt to control the emission in an automobile's exhaust. These emissions are entirely different from what they are in power generation. Here you are dealing with the emissions of carbon monoxide, hydrocarbons, and once again, the oxides of nitrogen. This is common, as I mentioned, whenever you combust any fuel. The Federal government, through a cooperative program with California, has developed a set of standards for the reduction of carbon monoxide and the reduction of hydrocarbons in all 1968 automobiles. All 1968 automobiles will have an air pollution package on them which will reduce the carbon monoxide from an average of 3.5% to about 1.5%, which is about a 60% reduction. This is also true with respect to the hydrocarbon levels. When we talk hydrocarbon, we are talking of parts of a million, levels of 275 or 300 parts of a million, so when you talk 2.5% or 3.5% carbon monoxide, if I can relate this to parts of a million, you are talking thousands of parts of a million. For example, 3% is 30,000 parts of a million, so when we are talking about reducing carbon monoxide to 1.5%, we're talking about reducing

it to 15,000 parts of a million. One might ask, "Is this enough? Will this solve our problem?" I will attempt to answer this within the confines of what we have recently done. I do not think that this procedure will solve the air pollution problem in urban areas, as I see it. It will make a contribution, but will, by no means, solve that problem. In some recent studies that we have just completed, we have found that the levels of carbon monoxide in Manhattan at five specific locations are directly related to the traffic congestion pattern. It is not a 24-hour problem. It is probably not even an 8-hour problem. It may very well be one related to a 4-hour peak in that city. We are also finding that the levels of carbon monoxide are not pervasive, that is, the level of carbon monoxide in one part of Manhattan differs from the level in another part because of different traffic patterns. So we feel now, preliminarily, that the problem of automobile exhaust in the city with respect to carbon monoxide is a series of local problems related to traffic patterns. Therefore, if we are correct in our assumption, we must look at the problem in an entirely different way. We must find other solutions to that problem. We may need to change the traffic pattern, because the release of carbon monoxide into the atmosphere with respect to automobiles is directly related to the rate at which the vehicles move. If you move at five miles per hour, the amount of carbon monoxide is at its maximum. You can almost cut it in half if you increase that rate to 10 miles per hour. There is an exponential curve that shows the relationship. Of course, you simply do not eliminate the carbon monoxide if you go 50 or 60 miles per hour, but you reduce it substantially in terms of the mass rate of emissions, and this has a very strong bearing on the problem itself.

Just one other aspect. There is a considerable amount of research going on right now in developing new types of energy for the movement of vehicles of one type or another. Here we are talking about the electric automobile, powered either by batteries or fuel cell. We're talking perhaps about the turbine type of bus that hopefully will be on the streets next year, whose emissions ought to be substantially different from those of the internal combustion engine. However, it would appear that these changes in energy patterns, if they are to come, are five to 10 years away at least.

Will the exhaust from new car models with improved combustion increase pollution in any way?

(*Mr. Heller*) I think I can say this to you, first of all, that the air pollution package on the cars will improve combustion and, with it, you can expect probably some increase in oxides of nitrogen. Every time you improve combustion with a fossil fuel, you are going to increase the amount of oxides of nitrogen discharged. Is this cause for concern? I would say that it is important for us, once again, to define the parameters in which our concern ought to be so stipulated. In New York City, for example, next year with our 38-station network, we will be monitoring the atmosphere on a real time-telemetered basis. In 10 of our stations we will undertake to define the levels of oxides of nitrogen at the breathing zone level in the city, and then we will be in a position to make some assessment whether a problem exists now, and, if we proceed in the direction of improving the combustion from the automobiles or other sources, what effect this might have.

(Dr. Hugh Montgomery) *What will be the pollution effects of nuclear power generators?*

(*Mr. Heller*) I don't think there is any doubt that the use of nuclear energy for power generation is on the increase, on the sharp increase, far more than was anticipated even two or three years ago.

From the best of my information, nuclear power will not introduce an air pollution problem. As to the question of whether or not it would introduce a water pollution problem, there is very good evidence from all the experience we have had that techniques have been developed for the disposition of the waste in a satisfactory manner. There are very, very strict safeguards established by the Atomic Energy Commission before any nuclear power plant can be constructed, so I would say to you that if we were able to move out of the fossil fuel area into nuclear power generation, we would have a dramatic effect on air quality as we know it today, and I simply do not foresee another type of problem.

(Dr. Arthur DuBois) *Concerning the physiological effects of sulfur dioxide and carbon monoxide, are the levels not rising to the point of creating a health hazard? It seems that the levels reported from various cities are actually reaching those levels which produce measurably physiological effects. I should like to ask Dr. Riley for his opinion.*

(*Dr. Riley*) Dr. DuBois, I didn't mean to imply that we never got to the range where there are physiological effects, because, with the measurement of increased airway resistance and the measurement of increase carbon monoxide hemoglobin (at levels which are realistic in terms of what Mr. Heller has been telling us exist in New York City and other places), there is no question that we have already reached levels where there are physiological effects, but the question is what you define as a severe health problem. The fact is that most of these irritant effects and the carbon monoxide effect, etc. will wear off if you get out of the contaminated area. The kind of health problem that, to me, is the particularly frightening and at the same time currently uncertain one is how much does prolonged exposure to low concentrations of various toxic substances lead to chronic pulmonary disease of a really disabling nature, such as chronic bronchitis and emphysema, and even possibly, lung cancer. These things I don't think can be stated with scientific firmness so that we know what the place of air pollution is in relation to chronic lung diseases. Some of you may not know that Dr. DuBois has been responsible for some very beautiful research on the effects of particulate inhalation on pulmonary function. He knows very well what he is speaking of. It is quite true that you have transient effects, and I don't mean to underrate transient effects. If carbon monoxide gets high, especially in someone who is already anemic or especially if it is at a high level, such as in some of the high tunnels that are proposed in the Rockies, it impairs judgment, it causes symptoms and is highly undesirable. A distinction can be made, though, between effects which will wear off if you get out of the polluted environment and effects which are cumulative over a lifetime's exposure, which may be ever so much more devastating to health, and this distinction, of course, is the kind of thing which it is so annoying not to be able to speak more certainly about. The fact is, however, that epidemiological studies are peculiarly difficult because cigarette smoking studies dominate the picture to a great extent and there are a comparatively small number of studies on the harmful effects of air pollution. I want to accept your point as a perfectly valid one, that there are physiological effects at levels of air pollution which are currently frequently encountered, and that these may be temporarily mildly disabling, causing discomfort, and creating potential danger in terms of people driving automobiles. Certainly, if levels went still higher, these temporary problems would become major health problems.

With the population explosion, does the

technology of reducing carbon monoxide in autos, etc. really serve as an answer?

(*Dr. Riley*) I appreciate that question very much because I think it raises a very important point, namely, that it is entirely unrealistic to think that technological improvements in control measures are going to solve our problem. I think this was implied in what Mr. Heller said too, that control measures are always partial—you never eliminate—and that they are more than overbalanced by the increasing concentrations of sources of pollution, such as automobiles and all that goes along with congestion and bigger and bigger urban concentrations. What can an individual do about it? He can't do anything except get out of the area. Some of you may have known that very funny show that was in Britain, "Beyond the Fringe." They were talking about what to do when there was a bombing raid in London, and one time they were getting in a brown paper bag and another time they were just getting out of the area, which was very comical. But there is nothing an individual can really do if he works in the city and lives in the city, except breathe the air that exists in the city. It has to be a community effort and, furthermore, it has to go beyond reliance on technically qualified people to provide control measures. It has to involve city planning; it has to involve a decentralization, a reduced concentration of these sources. I don't mean to say that planning should be done alone either. Obviously, planning has to go hand in hand with efforts at specific control measures, such as exhaust devices and crank case emission devices and, of course, control of what comes out of the stacks of industrial plants and power plants. But your point is that this is not going to solve the problem if more and more industry is concentrated in small areas, and particularly in areas where the meterological conditions are unfavorable from the point of view of people living in the area. You've got to go much further into the area of planning, of keeping areas that are not congested, of spreading out sources as well as controlling them, and this is an area where both of the other members of this panel are very much more qualified than I am, and I am sure your point is one that they would like to speak to you about also.

(*Dr. Burney*) At breakfast this morning we got into a discussion as to whether we should have more and more larger cities or whether there should be fewer large cities and new ones developed about the rural parts of the country. In other words, do we continue to develop Manhattan and Center City in Philadelphia or do we develop another city out in Bucks County or some place else around here?

(*Mr. Heller*) Dr. Burney, the interesting part of this, of course, is that, if you look at the urban core of cities in America, you find that on the basis of projection, there is likely to be little change in the population in the next 10 to 20 years. In other words, the City of New York does not expect to expand substantially population-wise. I think I can say this is probably true for Chicago as well. What you are faced with, on the other hand, is a very sharp increase in population density in the suburban area as you radiate out from the city. When you do this you begin to build a very large metropolitan center, so to speak, and by doing so you tend to reduce the amount of "good quality air" coming into the city, and you increase the amount of people who live out on a radially distributed basis who want to come into the city for whatever purpose there might be, to work or to enjoy what the city can offer. So you are not really dealing with a population explosion within the city itself. You are dealing with, on the other hand, an increase in population in the urban area, and it has been estimated that within 10 or 15 years from today, 85% of all living Americans will be residing in 10 to 15% of the land mass, and this is the

point that we were discussing this morning. This makes the problem an ever-increasing one, for as you make a large step forward with respect to control, you have to take into account what the future changes are likely to be to make a judgment as to whether that change is going to be sufficient, and you may have to, on a supplementary basis, make some additional changes concurrently.

I want to get back to the carbon monoxide problem. The automobile exhaust problem basically started in Los Angeles, and Gordon, of course, has been intimately associated with it, having served as control officer for a number of years. But we in New York City do not have the same kind of problem. We do not have the eye irritation at present. I'm not suggesting we will not have it in the future. Why we do not have it at the present time, I can't tell you. From the stand-point of the chemistry of the reaction, it ought to occur. If you look at the hydrocarbons that are there, if you look at the oxides of nitrogen, you certainly have enough solar radiation for this to occur, but it doesn't occur, certainly not to anywhere near the extent you have in L.A. We do not have any complaints in the City of New York during the summer months with respect to eye irritation, but there is some evidence of damage to vegetation in the area, and this is enough to alert us to the fact that if we continue with our rates of emission, there is a likelihood that we will have some type of reaction and physiologic response, as you mentioned, similar to what you have in L.A. So, the point I want to get across, if I might, is this: it is imperative in any program, whether it be in the City of Philadelphia or anywhere else, to define the problem, to know what is in the atmosphere as best you can; when you have made such a definition and when you have concurrently estimated where the emissions are coming from, then you can begin to establish priorities and proceed to solve your problem. But if you do not define the problem intensively, in my judgment, you may make decisions on what appear to be the problem and may very well not be the problem to attack at all.

Would it be possible to bring in fresh air to replace noxious exhaust fumes?

(*Mr. Larson*) The best machinery we have for getting rid of air pollution, of course, is the wind, and when we have good wind movement, or what we call ventilation, in the area, even today with all the massive amounts of pollution in the air, we have many days when there is no effect and no problem. But, to create man-made machinery to move this air and do what the wind does is pretty well beyond our capability today energywise, and I can illustrate this most appropriately, I think. It sounds exaggerated, but, in the early days of the Los Angeles smog problem, proposals were made to move the air out of the Los Angeles basin, and these proposals had to be studied. The calculations in the Los Angeles basin to turn the air over one day and move it out into the desert led to the conclusion that it would have taken about 50 tunnels a mile square through the mountains east of Pasadena and all the power that Boulder Dam could generate in 10 years to turn the air over once a day. So the problem gets to be pretty massive, and it's not within our thinking. We can effect dilution, however, by other means, and this is to some degree through planning, by defining the problem, knowing where we're going, what we can permit in the air, and then make sure that as we grow we don't exceed these levels which are air quality standards for a community.

(Dr. J. Russell Elkinton) *Would a change from the internal combustion engine to electric motors and other forms of transportation alleviate the problem? Would the cost of such changes be prohibitive?*

(*Mr. Heller*) This is a very apropos question. On November 7th we have a transportation bond issue which we are trying to put across in the State of New York, and we hope that we will be successful. The very point that you are making is that in the urban area one must begin to think in terms of a variable form of mass transportation, particularly into the heart of the city. If you can provide transportation, say, by a much greater use of subways employing electrical energy in the City of New York, you would have a much better chance of controlling the air pollution. When you can improve the mass transportation in an urban area, minimize the traffic congestion problem, and move vehicles at a much more rapid rate, you are going to reduce the emissions into the atmosphere. You cannot help but improve that condition. You are not going to eliminate it, as Mr. Larson said, but you will improve the air quality with respect to each of the components. So one has to look at the totality of how to move people in and out of an area, and this is what we will be attempting to do in the City of New York.

(*Dr. Burney*) It might also reduce tensions and improve mental health.

Does the Federal government now play a part in determining emission standards and air quality standards?

(*Mr. Larson*) Well, this is a whole day's discussion because, as you know, this matter is under debate and will be debated for a long time. It is a philosophical question as well as a very practical question of enforcement. There is a very vital consideration of competition. There is the argument that says, for example, that, if you have a strong air pollution control program in the City of Philadelphia and limit how much dust can be put out of a steel plant, then you must have the same standard down the road 20 miles, or the plant is going to go down there and locate. If you force the company in one area to spend $100,000 to control its air pollution, and its competitor in the same economic region is not required to do so, there is a disadvantage competitively in the economic market. These are all very vital arguments. In regard to national emission standards, I think I can say, in general, that industry as a whole is against such standards and has voiced its views very strongly in the hearings pertaining to this matter. The Federal point of view, the National Air Pollution Center's or the Secretary of Health and Welfare's position, on the matter is that, both for enforcement reasons and economic considerations in control, it would be better to have national standards. This debate is going to go on.

Another aspect that is vital to what the decisions will be in the future is for everyone to recognize that now the Federal government does have the authority by law to enter the local situation in certain cases and to force control to be accomplished. This is a new area of Federal activity in the air pollution control field, and I think it goes without saying that, if air pollution control is not accomplished on a satisfactory basis within the states, there will be Federal intervention. In the event of Federal intervention on a problem as broad as this one from an enforcement and air quality point of view, the government would almost have to insist upon uniform standards. There might be some variations, but it would be completely impractical for the Federal government to move into one area and do one thing and some place else another. If local communities or states do their jobs, you would expect to find perhaps different standards in different areas; if they do not do their jobs, you might end up with a legal, more uniform type of standards.

(*Dr. Burney*) The President-Elect of the Philadelphia County Medical Society and Chairman of the Department of Preventive Medicine at Woman's Medical

College, Dr. Katharine Boucot Sturgis, would like to ask a question.

(Dr. Sturgis) *Are you having the same problems in New York that are plaguing us here in Philadelphia, where we are constantly being asked to document the adverse health effects of individual pollutants in order for the city department to proceed? We are unable to document with precision.*

(*Mr. Heller*) I am pleased that you ask that question because it gets us into a practical and philosophical approach to the problem.

In New York City last November, Mayor John V. Lindsay promulgated a set of air quality standards for the city. He did this in concert with the New York State Air Pollution Control Board. We have defined what we mean by clean air in our city. We have the full support of the medical community. We have said, for example, that the levels of sulfur dioxide shall not be greater than so much on a 24-hour basis and so much on an hourly basis. We have said for the City of New York that we have too much dirt and, therefore, we have said that this is our target from the standpoint of particulates in the atmosphere. We have set a tentative standard for the amount of carbon monoxide and a number of other components. We went to public hearing on this and we had no problem at all in moving ahead. We have done one more thing which has not been done in any other city in this nation. We have said that it is not enough for us to define our targets in terms of what we mean by "clean air." It's far more important for us to say that we need to get there in a certain period of time within our best judgment. So last November we said that this is the target for clean air in the City of New York, and we took the position then that we wanted to get there in five years or less. "Where was the source of information which allowed us to establish these levels?" I am sure you are going to ask that question. Well, the State of New York had already established various levels of air quality dealing with what they called the regional aspect, where they broke the state up into a number of regions and categories, taking into account not only the health aspects but the socio-economic and the aesthetic considerations, all in one piece, and this is published, so one can easily procure such a document. It was from that information, since we in the city are under New York State law, of course, that we selected standards for ourselves which were more severe than the State of New York had wanted to suggest that we set for ourselves. We did one more thing. We said that in the City of New York we want the same air quality for every one of our boroughs, and we were not going to be satisfied to select an industrial section of our city and say that that atmosphere must be substantially poorer. We have the full support of the Mayor, and our entire program, may I say, because of these objectives, has gone along much more effectively. We have an orderly approach. I can stipulate readily to the Mayor and to the City Council our financial needs, our air quality needs, in terms of measurement and the types of people we require.

I think it is readily understood that you cannot wait for what you might call full documentation. There is reasonably good evidence for us to move ahead and we must have the courage, in my opinion, to set a target for ourselves, to provide the manager with sufficient tools, to make the decisions for emission standards or performance standards, as we might call them in some areas, and when the control devices do go in, to assess how successful we are. It is not enough merely to put a piece of equipment in and say it meets a performance standard. It is just as important, maybe more so, to see to it that it is managed and operated on a continuing basis to meet that standard. This then means

that the governmental team must be geared and trained, capable of working closely with industry, very closely with it. In our case, we have eight or ten thousand on-site incinerators and we have got a real problem for ourselves, far more serious in this respect than probably any other city, because of its pervasiveness, and we are asking thousands of people to manage complex equipment from the standpoint of control. If you want an illustration of how we have moved, this is how we have proceeded, and the benefits are already self-evident. I might also at this time, if you don't mind, pass on a kudo. All of our power generator equipment is right within the City of New York. Fifty per cent of the sulfur dioxide emitted in the City of New York has come from power generation. This is what it was in July 1966. Now, I'm happy to tell you today that this is being cut in half by the utilities, willingly, because they understand where we are going. They understand what the problem is and why we need to move as we have moved. They are proceeding roughly 5 years before schedule to meet this target. In other words, what they have done is to cut the sulfur content which was allowable at 2.2% down to 1% for all the fuels we burn in the city, so early next year the maximum sulfur content in the fuels we burn in the City of New York will be 1%. This is then going to mean an over-all reduction of at least 25% of the sulfur dioxide discharged into the city's atmosphere. Secondly, we have taken another step, which is all part of the orderly program, to encourage the use of interruptible gas and #2 fuel oil. Now the interruptible gas must be made available by the utilities, and it is being made by Brooklyn Union Gas and by Consolidated Edison. The Mayor set up a joint task force only a week ago, which has asked utilities to work with the city to determine what it is going to take to convert city establishments to the use of interruptible gas and #2 fuel oil. What does this mean? It means that we shall be capable of reducing the sulfur dioxide by 98% with not a very significant increase in cost. We shall be burning a clean fuel 90% of the time and the other 10% #2 fuel oil, which is an essentially clean fuel. So we shall have ancillary benefits and reduce the particulates right along with the sulfur dioxide in the city's atmosphere. So it can be done, and this is the point I am trying to make.

(*Dr. Riley*) I'm very sensitive to Dr. Sturgis' comment because, coming from the State of Maryland, we have not had either the necessary climate of opinion or the necessarily forceful leadership to move right ahead in the absence of this documentation of which you are speaking, and I think it really is a great mistake. I have tried to stick as closely as I could to the facts about health effects, but the point is we can't document a lot of things, and the program must not be allowed to be put off simply because a few scientists have a tough problem that they haven't yet been able to answer, and probably won't be able to for some years to come, I might add. And it is absolutely refreshing to me to see that when the general climate of public opinion has reached a certain point (and incidentally that is an excellent reason for this morning's meeting), when the climate of opinion is ready and the problem is sufficiently bad (I hate to introduce this, but unfortunately, humans don't ordinarily take action until things are pretty bad), and necessary leadership is added to this, then there is no reason why people can't move ahead. We should not feel always on the defensive because of inability to supply complete documentation.

(*Dr. Joseph Stokes, Jr.*) *Have long-term studies been carried out on the effects of pollutants in large animals?*

(*Dr. Riley*) The idea of using an animal model for studying long-term effects of pollutants is an extremely attractive one,

obviously, because you can do experiments under so much better control. I think that it is all but impossible to use an animal for this particular kind of study. As you know, it is terribly difficult to produce emphysema, chronic bronchitis, and this sort of thing, in an animal, in anything like the form that is seen in human beings, and, when it has been done, it has been by rather extreme and unusual measures. I do not think that there is an animal substitute for long-term human experience in the chronic and really devastating forms of lung disease. This is part of the answer as to why we do not know more than we do right now. It is terribly difficult to do these things on human beings. They move, they have all sorts of complicated life patterns, they smoke, they have intercurrent infections, they may or may not be asthmatic. There are many problems, but the idea that these can be by-passed by doing long-term studies on animals is, I think, really very unlikely. The veterinary school of the University of California in Davis has been much interested in using the horse, since it is subject to heaves. This has really not advanced the understanding of long-term effects on human beings a great deal. The acute effects, such as those on muco-ciliary function (this is, as most of you know, one of the important mechanisms for getting rid of particulates that have been inhaled into the respiratory tract) may be very well studied in animals, and such experiments show that almost everything affects muco-ciliary function. The animal mechanism is very sensitive; a change in temperature, a change in humidity, as well as inhalation of all sorts of particulates will produce immediate effects on the rate at which particulates are removed from the airways, and this is probably of very great importance in this long range problem that you are speaking of, because if the removal of contaminants is impaired, tissue exposure will be greater. But I am not aware of long-term animal studies that have really put us very much further ahead.

(Dr. Joseph Stokes, Jr.) *Are there dangers connected with the incineration of plastics and has the incineration of such polymers been controlled in New York?*

(*Mr. Heller*) The question, if I may restate it as I understand it, is that with incineration of plastics, what happens to the exhaust gases, or what is the nature of the exhaust gases?

Let me illustrate a few cases. In burning a polyvinyl chloride, for example, in an incinerator, one of the components discharged is hydrochloric acid. In burning what we call a halo-carbon, which contains fluorides or fluorine in one form or another, hydrogen fluoride (or perhaps some compound containing the fluoride atom, depending upon the temperature of combustion) is discharged. If you look at the wide variety of polymers that are being manufactured now, you will see that most of them, if not all of them, are organic in nature, and they readily burn. Therefore, whatever is in the polymer, aside from the polymer itself, is likely to be found in the atmosphere. For example, metals of various types used for coloring, or fillers, are also discharged into the atmosphere when plastics are burned. Now, if you look at the refuse disposal problem in America today in our urban centers, and look at the tremendous growth of plastics manufacturing activities over the past 20 years, which is likely to continue at practically the same rate for the next 20 years, and if you look at the greater use of plastic materials, especially plastic disposables, and then look at the different components in refuse that must be disposed of, you can see that over the next 20 years that there will be an increase in the quantity of polymeric materials that will have to be disposed of by one form or another. They are not biologically degradable, so the chances are that if they are put into a sanitary land

fill, they are going to stay there for a long time. If they are incinerated, there will be by-products in the exhaust gases. It is incumbent upon us to define the problem in two ways: to study the composition of the refuse to be burned, if we are going to incinerate the materials, and, to examine the composition of the exhaust gases. We must then examine the atmosphere to see how these two items relate. May I say that one of our targets next year is to evaluate the metals profile in the city. We shall have 38 stations which will be operational; we shall examine for the presence of at least 10 metals in the city's atmosphere for a period of one year. Then, after we have made this assessment, we shall be in a much better position to say, "Do we have a problem? Where does the problem exist? Where is its likely source?" I might say once again in regard to incinerating plastics that information about air quality levels indicates merely that there *might* be a problem. We must still define the problem in depth.

Should standards for air quality be established with the requirements of susceptible individuals in mind?

(*Dr. Riley*) First, I do agree that patients with chronic pulmonary disease can be considered sensitized subjects. They have a more severe reaction to lower levels of irritants of all sorts, and more prolonged. Ideally, obviously, we certainly have every reason for protecting such patients from additional discomfort. Such individuals might be protected in rooms with filtered air. But here we are struggling to return the general urban atmosphere to reasonable levels, and what you are suggesting really, to me, carries the implication that we should make the standards sufficiently stringent to apply to a sick patient who has more rigorous requirements than the general public. I think that this would be fine, but we have a long way to go before we even reach the requirements for the general public. I really think it is just a question of what is feasible.

(*Dr. Burney*) Dr. Terry, would you like to ask any questions of these gentlemen here?

(*Dr. Luther Terry*) Thank you, Dr. Burney. I am delighted to see you presiding at this meeting, because I am sure any one of us who would like to see a developing Federal program realizes that during your term as Surgeon General you were responsible for getting this thing off the ground and getting the program established on a firm basis. I am particularly happy to recognize that before our colleagues here.

I would like to say that I am delighted at the number of physicians who are here today. Though this is by no means restricted to being a health problem; at the same time this is one of the aspects of concern to us.

The other thing I would like to say is that I think that the problem of air pollution is a particularly difficult problem because it represents the example, par excellence, of a problem that is not limited to any set political jurisdiction. It is a regional problem, and our approaches to it are going to have to be on a regional basis. Others have brought out the problems of economic impact, of trying to impose control in limited areas, and the fact that control is completely ineffectual unless one does make a regional approach, so I think we need to develop the best Federal legislation that we can to control interstate aspects of the problem. At the same time I think that most of these problems can be tackled and with a great effect at the local and regional levels. I think you must very realistically focus on that.

Have air quailty standards and emission regulations been established? Are the regulations being enforced?

(*Mr. Heller*) Let me, first of all, tell you that we have set our air quality standards,

and we have determined how long it is going to take us to achieve them. We also do have, from a legal standpoint, emission standards for particulates from all types of incineration, applying to on-site incineration, municipal incineration or industrial incineration. We have emission regulations with respect to particulates from the burning of bituminous coal, and by May 1969 no one in the City of New York can burn bituminous coal without installing control devices which will remove the particulates by at least 99%. We have established legal requirements for the control of sulfur in fuels. All fossil fuels must meet certain sulfur requirements at the present time, and they are scaled downward so that by May 1971 all fossil fuels must contain sulfur of a value no greater than 1%. Those of you who have been following in the newspapers know that there has been a hearing at the State Air Pollution Control Board in regard to Rule #200, which at the present time stipulates that by 1969 (April and October respectively, depending on the size of the structure), the maximum allowable sulfur in the fuel shall be no more than 0.35%. So we do have emission standards and we are enforcing them. Now, how much further do we have to go with respect to control?

An intermediate objective is the air quality monitoring network. We will have in operation by the end of the year at least 38 stations which will measure for us on a continuing basis the levels of certain specific components, such as sulfur dioxide, carbon monoxide and particulates. We will be measuring the total suspended particulates on a 24-hour basis, and the dust fall. Over a year ago we began an intensive inventory of all emission sources in the city of sulfur dioxide, particulates and carbon monoxide, and we have just about completed that phase. We now also have a fair idea about the extent to which emissions must be reduced to allow us to reach our target. We will know enough in 1968 to be able to say that the emissions of these substances on a per square mile basis in the city are going to be so many tons per day, and we will know what the sources are, and when we tie in the source inventory with the air quality information, if we have sufficient computer facilities, we can begin to relate these two and then on a simulated basis determine to what extent we have to reduce these levels. In my judgment, we have to go both ways. We cannot simply say that we are going to control something and not know to what extent this is going to have an effect on the air quality we are trying to manage.

(*Dr. Burney*) I wonder if it is appropriate to ask our friend from New York what his budget is for research in control procedures.

(*Mr. Heller*) I thought you might get to that, Dr. Burney. Well, I'll give you a little history because I'm rather proud of where we're going. In July of 1966, or June 30, 1966, it was $1,300,000. On July 1, it was $1,600,000. That was the day I arrived. Whether that was fortuitous, I don't know. As of now, the budget is $2,800,000. We have requested the Federal Government to improve our monies by a $600,000 grant, and I hope when the freeze is over we will receive those dollars. We are now in the process of applying for a little over a million dollars as a maintenance grant. We have received a half million dollars for a demonstration grant so that we might evaluate the best device to install in all of our eleven municipal incinerators, and this device hopefully will go into operation this year. My target is a five million dollar program. This is what we think we need to manage the problem effectively. Remember what the economic impact might be when you make one decision in a city as large as ours. For example, if you institute a regulation which says that you are allowed only to use a fuel containing no more than 0.35% sulfur, what does this mean today, even if it were available? It simply means that you can't burn coal,

because it isn't available in that low sulfur content. Secondly, the only fuel oil commercially available today to meet that requirement is a #2 fuel oil. If that is available, its cost would double the cost over and above what it costs us today, and that is in the magnitude of $130,000,000 a year, just on an expense basis alone. I cannot make a comparison with natural gas because it is simply not available in the quantity to meet our requirements. Therefore, it is incumbent upon those of us who are trying to manage the environment to recognize that we have a target to establish emission regulations that are meaningful relative to the target and also to find a route that is economically feasible.

(*Dr. Burney*) Gordon just passed me a note saying that the budget for the whole Commonwealth of Pennsylvania is $288,000.

What can be, or is being done, to further interest the public in the seriousness of air pollution?

(*Mr. Larson*) The only real measure, in my judgment, that has stimulated public interest has been the Federal program on air pollution conducted under the U.S. Public Health Service. During the past three years, that program, by granting money to local air pollution control departments of cities and states, and the public information that has been sent out by newspapers, radio and television have generated a tremendous amount of public interest, which, three years ago, was virtually non-existent on the east coast of the United States.

Mr. Larson, you commented that the Philadelphia public did not express itself strongly on pollution. Do you recommend a referendum, and if so, how would you phrase the question?

(*Mr. Larson*) Well, I'm not skilled in the wording of a referendum. I'm sure if the question was, "Do you want air pollution control, or do you not?" the answer is "Yes." You can't be against it. I think that there are many ways to generate interest and many ways for the public to express interest in the community. I believe that in the Philadelphia region we are at a point today where groups are generating interest and where we will see in the coming year, where our governmental officials will see, whether or not we really are serious in this area. There are at least five committees being formed at the present time which seem to have serious intent to become informed and to be effective. If this happens, there isn't any question of or any need for a referendum. I think you'll find that political judgment will say the people do want air pollution control, but I think we are a few months away from knowing.

(Dr. Leroy E. Burney) *Mr. Heller, I would assume that you haven't operated in a vacuum or that Mayor Lindsay did not seek this without some interest and support from you and the public. What did you do in New York City?*

(*Mr. Heller*) Well, let me say this: we are certainly not operating in a vacuum, as you well know. Before I came to the City of New York, the Mayor, shortly after he was elected, appointed a task force given the charge to define the problem in the city: how serious was it, what needed to be done, and how should he proceed? This was headed by Norman Cousins and consisted of an erudite, professional group from many disciplines, something we talked about a little earlier today. Now this report has been very meaningful to the Mayor, very helpful to him in terms of not only implementing the program but also making long-term decisions. The Mayor has also appointed a New York Business Council for Clean Air which reports to him directly, headed by Arthur Murphy, Jr., and on that Business Council sit some of the leading executives of the largest corporations of America, and they have regular business meetings, executive sessions, and address themselves to special

problems that face my own department, so we have marvelous support from the business community.

There are many citizen groups that have been organized and have been provocative and most helpful in taking a position with City Council when new legislation comes up and by preparing information releases. I would just like to mention a few, for example: Citizens for Clean Air is a reactive group in New York and has taken a position of leadership; the New York Action for Clean Air, which is a state organization, plays a specific role; TB associations have been very effective and very helpful in bringing the message to their own people on a much broader scale. So what we do have is a broad interest at the citizen level, a specific interest by the Mayor in terms of bringing the business community actively into the program, and recognition by the Mayor that this problem needed to be defined broadly.

Recommendations

(*Dr. Burney*) Now, the time has arrived for us to receive from these very knowledgeable and experienced gentlemen some bits of advice before they become peripatetic specialists in some other area. We don't ask them to expand upon their recommendations; we merely ask them to enumerate in their words what we might very well do here to activate our efforts a little more. Mr. Heller?

(*Mr. Heller*) Dr. Burney, I should like to make three recommendations. One is that a definition of what you mean by clean air ought to be spelled out publicly and endorsed by the Mayor as his target and goal. Around that you can build your program.

Two, the budget and the type of man you want to manage that program is critical to how rapidly the program is going to move. I don't want to be in a position to tell you how much in the way of dollars you need, but as a rough rule of thumb, you might look at the problem of Philadelphia as a pressing problem and that it ought not to be less than 40¢ per capita and more likely 50¢ per capita in your city.

And, three, I think it would be most important that you encourage greater participation on a regional basis on a common meeting ground, namely, that air quality standards, types of measurements, and emission regulations ought to exist wherever the problems to be faced are common, so that everyone would move in a similar direction concurrently.

(*Dr. Riley*) I certainly can't speak with the background of experience that Mr. Heller has in relation to a program, but I would certainly include in it a large research program on the health effects of air pollution, including expansion of studies on the physiological effects. I would include the initiation and continuation of long-term prospective studies on chronic effects and also an extension of epidemiological studies currently in process. We must know more on a factual basis about the health effects of air pollution and about the different health effects of different kinds of pollutants, even though this becomes almost impossibly complicated.

A second aim obviously must include education and making use, on the part of those who have any special skills to offer, of the communications media, to help shape public opinion and, in particular, to create an informed public to back up what the responsible officials have to do.

A third recommendation would be community and regional planning, not simply with respect to air pollution in the narrower sense, but in the whole area of community planning, which involves the total problem, with air pollution simply one of many important components.

And the fourth thing is clearly forceful and courageous leadership on the part of those who are responsible for carrying out air pollution control programs. If they are adequately equipped with data from

their own sampling stations and from their own local experience and meteorological experience, as well as with knowledge about the chief sources of pollution in a given area, I think that we can be reasonably optimistic that the public will follow and will not in any sense interpose objections to firm policies.

(*Mr. Larson*) For those who are concerned with medical research, I am particularly interested in more effort being expended and more money being made available to competent research on the effects of particles (one micron and below in size) that are going to remain in the air after we do the normal control job that we know how to do. There should be continued investigation of the effects of these particles which, for lack of a better term, I call the organic aerosol. In Los Angeles, gasoline vapor in the presence of oxygen, oxides of nitrogen and sunlight, oxidizes and forms smoke, forms particulate matter from a photochemical oxidation process. We call it a polymerized organic substance. It is a discrete particle in the atmosphere and, to some extent, a good portion of the haze over most of our cities on certain days results from this oxidation reaction. This matter was studied to some extent years ago, and I believe medical research on photochemical aerosol formation and its effects should be greatly enhanced.

In my opinion, the major remaining requirement for control of our environmental pollution—whether of air, water or land—is a reorganizational approach in the realm of government at the Federal, state and local levels. Dr. Heller mentioned the interrelationships and the obvious need for eliminating inter-agency bickering. The air agency says, "O.K., you take it out of the air this way and put it in the water," and the water fellows say, "You take it out of the water and burn it." This does not make sense, and it's going on every day. The compartmentation that exists today in government with lack of communication has to be resolved in order to achieve good management in the environmental field. How it will best be done will be, in my judgment, a result of public interest and effort. I strongly urge everyone who is involved in community affairs, through whatever organization they are interested in, to form a small committee to find out what is going on and what is being done by government. Working on the communication and interrelation problems in the pollution field can be very interesting and will ultimately generate enough pressure to get the problem resolved in our government structure.

(*Mr. Heller*) With respect to what Gordon Larson has just said, to come back to our small endeavor in the city, we are now in process of reorganizing the total government structure, as you know, and the Mayor has a reorganization plan under way to do the very things Gordon just mentioned to you. We will be putting together what we call an environmental protection administration, which will include line operations dealing with air pollution control, noise abatement, water pollution control, solid waste handling, the installation and maintenance of distribution systems, the handling of all the sewage treatment problems and related sewer problems, all under one administration. This is being looked at; there will be a public hearing very shortly; copies of the Mayor's proposed total reorganization plan can be made available to those who are interested.

(*Dr. Burney*) Thank you. I know that you would like to join with me in expressing our very grateful thanks to these three gentlemen for being here this morning and for bringing their talents and their knowledge. At the same time I think they would want to express also to you the fact that your active interest and your knowledge and your provocative questions have made the job relatively easy for them.

(*Dr. Wood*) I would like to thank Dr. Burney for his very skillful and stimulating moderation. I'd like to leave with you just one thought. Bernard Shaw some years ago said, "The reasonable man is a man who tries to adjust himself to his environment. The unreasonable man is the man who tries to adjust his environment to him. Therefore, all progress is due to unreasonable men."

Follow-Up Report*

Elizabeth Kirk Rose, M.D., Chairman, Committee on Public Health and Preventive Medicine

Around the time of and since the date of this symposium on November 4, 1967, considerable activity has occurred in the Philadelphia area concerning air pollution and its control. Following are a few of the facts:

1. The special study by a team of USPHS experts (Philadelphia Air Resources Management Program, James D. Williams, June 13, 1967) has been accepted by Mayor James H. J. Tate and Philadelphia City Council.

2. In July 1967, a USPHS team under Mr. Robert Goldberg began a more intensive study of air quality in and around Philadelphia. They were also reviewing the statutes and necessary technical consultations.

3. On October 2–3, 1967, the Governor's Conference on Air Pollution was held in Hershey, Pennsylvania.

4. On November 21, 1967 new federal legislation (PL 90-148, Air Quality Act) was passed. This set up a three year program providing $428 million, plus $125 million for research and endowed the federal government with considerable powers should the states be ineffective or tardy.

5. Philadelphia's current budget in 1968 for air pollution has been increased to approximately $900,000 from about $300,000 in 1963.

6. Active recruitment for the new position of Assistant Health Commissioner for Air Management Services is underway.

7. The College of Physicians of Philadelphia strongly supports this program for air management as a basic and continuing interest in the health problems of the people in this area.

* March, 1968.

Cooperating Groups

Academy of Natural Sciences of Philadelphia
Air Pollution Commission, Pennsylvania Department of Health
American Cancer Society, Philadelphia Division
American Red Cross, Southeastern Pennsylvania Chapter
Associate Hospital Service of Philadelphia
Bell Telephone Company of Pennsylvania
Center City Residents Association
Citizens' Council on City Planning
Delaware County Tuberculosis and Health Association
Delaware Valley Citizens' Council for Clean Air
Delaware Valley Hospital Council
Delaware Valley Jaycee Regional Development Council
Fels Institute of Local and State Government, University of Pennsylvania
Franklin Institute Research Laboratories
Free Library of Philadelphia
Greater Philadelphia Chamber of Commerce
Hahnemann Medical College
Health and Welfare Council, Incorporated
Heart Association of Southeastern Pennsylvania
Industrial Medical Association
Jefferson Medical College of Philadelphia
Junior Chamber of Commerce of Philadelphia
La Salle College
League of Women Voters of Philadelphia
Pennsylvania Tuberculosis and Health Society
Philadelphia Chapter/American Institute of Architects
Philadelphia Council for Community Advancement
Philadelphia County Dental Society
Philadelphia County Osteopathic Society
Philadelphia Department of Public Health
Philadelphia Electric Company
Philadelphia Gas Works
Philadelphia-Montgomery Tuberculosis and Health Association
Pennsylvania Air Pollution Commission
Pennsylvania Department of Health

Pennslyvania Economy League
Pennsylvania Medical Society
Regional Conferences of Elected Officials
School District of Philadelphia, Board of Education
Temple University
United Cerebral Palsy Association of Philadelphia and Vicinity
United Health Services
University of Pennsylvania
Woman's Medical College of Pennsylvania

Acknowledgments

The sponsoring organizations wish to thank Dr. W. B. McDaniel, 2d, Curator of the Library Historical Collections, for the exhibit of illustrative historical literature which he so kindly prepared in the lobby.

The Editor of the Transactions and Studies wishes to express his appreciation to Miss Marie de Benneville for her careful transcription of the recorded program.

Lessons on Pain Control from Electrical Stimulation[1]

By WILLIAM H. SWEET, M.D., D.SC.[2]

Introduction

S. WEIR MITCHELL'S perceptivity and clinical experience led him to make a statement (1) which Dr. White and I used as the opening sentence in our 1955 monograph on Pain: "Perhaps few persons who are not physicians can realize the influence which long-continued and unendurable pain may have upon both body and mind." In 1864, Mitchell, with Morehouse and Keen, described the strange symptom complex he called "causalgia," Greek for burning pain. The continuing importance of this and his other contributions is attested not only by our gathering today in his honor, but also by such facts as that the three-day International Symposium on Pain at the Henry Ford Hospital in 1964 had Silas Weir Mitchell as the subject of the banquet address and that the American Academy of Neurology in 1965 reprinted his monograph of 1872, "Injuries of Nerves and Their Consequences."

Although the physician's primary objective in dealing with pain must be to eliminate its cause, there are many situations in which the immediate requirement is to stop or allay this symptom. An effective drug of low toxicity would be perhaps the simplest solution. Yet, despite intensive efforts along pharmacologic lines, only a highly qualified success had been achieved by analgesic drugs or combinations of these with other drugs. The degree of failure has been highlighted for me by the reports of Raymond Houde (2) and colleagues of the Sloan-Kettering Institute for Cancer Research in New York City (1962, 1964). Table I illustrates the result of one of his well-controlled studies from the cancer clientele at that hospital. Morphine is often taken as the classic example of an analgesic which gives good relief of pain but has the drawbacks of being followed by adaptation, addiction and toxic symptoms. Yet, Houde found that, even at the optimal time of one hour after the injection of 10 mg. of morphine, only two-thirds of the patients had greater than 50% relief of pain. Table II summarizes the results with chlorpromazine, 25 mgs. Used alone it had the same effect as saline; used with morphine it gave the same degree of pain relief as morphine alone, although it added more drowsiness to the analgesic effects. Such reports have encouraged a number of us to intensify our efforts to understand and control the intrinsic mechanisms for pain.

The standard surgical tactic for achieving lasting control of focal pain has involved destruction of some neural pathway activating that pain ever since Maréschal carried out trigeminal neurotomies during the reign of Louis XIV. The progressive refinements in knowledge of the locus for a fruitful lesion and the technique for achieving it have provided today's physician with a comprehensive

[1] S. Weir Mitchell Oration XVIII, The College of Physicians of Philadelphia, 4 October 1967. The views presented in this oration will appear as the final chapter of a book, *Pain: and the Neurosurgeon,* by James C. White and William H. Sweet. We are grateful to the publisher, Charles C Thomas, Fort Lauderdale, Florida, for permission to reproduce the material in the *Transactions and Studies of The College of Physicians of Philadelphia.*

[2] Associate Professor of Surgery, Harvard University Medical School, Massachusetts General Hospital, Fruit Street, Boston, Massachusetts 02114.

TABLE I

DOUBLE BLIND STUDY, PATIENTS WITH CANCER

	Percentage of Patients with 50% Pain Relief	
	At 1 hour	At 4 hours
Saline	40%	8%
Morphine, 10 mgs.	65%	30%

TABLE II

COMPARISON OF CHLORPROMAZINE AND CHLORPROMAZINE WITH MORPHINE

Chlorpromazine	Same effect as saline
Chlorpromazine with morphine	Same pain relief as morphine alone, but patient drowsier than with morphine alone

series of procedures. These give useful relief with few sequelae in many clinical situations; but, unacceptable degrees of sensory, motor or mentational loss or painful dysesthesias on the one hand and failure to relieve the original symptom on the other hand still, in varying degree, plague the surgical therapist.

Amplification of inhibitory mechanisms for pain, perhaps by non-destructive means, is the little-tried alternative to which I shall devote the remainder of my remarks. From our general knowledge, we are long since aware of the effectiveness of learned inhibition of sights and sounds. When using a monocular microscope, the medical students of my generation quickly learned to ignore stimuli to the other open eye. In our current, more affluent society the medical student's binocular microscope may have precluded his experimental confirmation of that statement. But all of us still have many chances to develop our auditory inhibitory faculties; *e.g.,* when sleeping in new noisy surroundings we soon negatively adapt to even loud sounds and learn to sleep through them.

To this mundane knowledge of inhibition, much sophisticated experimental evidence has recently been adduced. Whereas as Wiersma (3) in 1964 commented that the first two massive volumes on neurophysiology written in the middle fifties in the *Handbook of Physiology* made relatively few references to this topic, evidence for the widespread importance of peripheral and central inhibitory phenomena occupies much of the neurophysiologic literature of the past ten years. In 1961 there was an International Symposium on Nervous Inhibition. With respect to the neural auditory pathway in cats, to cite an early single example, Galambos and Davis (4) have demonstrated that a mechanism can be activated by conditioning which inhibits the firing as early as the secondary afferent neurons. This protects almost the entire brain from disturbance by the unimportant sound.

However, almost none of the flowering knowledge on inhibition deals with pain, since *this* subjective phenomenon lends itself only with great caution to experimental analysis in animals. I shall remind you here of but one example of careful mammalian studies in this field which led to the wrong conclusion. Gerard (5) in 1923 made a series of successively more rostral incisions into the spinal trigeminal tract in cats, each incision about 1.5 mm. above the previous one. She began in the lower medulla at the caudal end of the fourth ventricle, the obex, and ascended until stimulation of the cornea no longer elicited the so-called "pain reflexes" of struggling, pupillary dilatation and rise of blood pressure. Not until her incisions had reached the mid-pontine level did these reflexes stop, but we now know that in man even her lowest type of incision at the obex makes the entire trigeminal area analgesic. So, although Gerard's conclusion may well be correct for fibers concerned with certain feline reflexes, it is clearly wrong with respect to human pain.

To return to our everyday experience of pain, we are acutely aware that any mechanisms for keeping noxious stimulation

from consciousness seem relatively rudimentary. Such stimuli from within or without tend to command attention no matter how hard we try to concentrate on something else. Examples of normal individuals who under special circumstances apparently inhibit the usual awareness of noxa and feel no pain include those under hypnosis. Beecher (6) described another group exemplified by wounded American soldiers he saw at the Anzio beachhead in World War II. They "entirely denied pain from extensive wounds or had so little that they did not want any medication to relieve it," presumably because the wound meant for them a happy reprieve from the battlefield. Joy accompanying a painful process may also be the basis for the success of those obstetricians who have taught prospective mothers to bear their children without anesthetic drugs. Where are these inhibitory mechanisms and can we activate them when there is no joy on the horizon?

Inhibition by Stimulation of Peripheral Nerves

A potent, relatively peripheral inhibitory apparatus has long been hypothesized in man as a consequence of the following facts: after division and suture of a cutaneous nerve, there is initially a zone of skin from which no sensation can be elicited; as recovery occurs, pain is at first the only sensory modality evokable by any stimulus at a time when touch and temperature cannot be felt. Head, Rivers and Sherren (7) in 1905, Förster (8) in 1927 and many others have drawn attention to the peculiar features of the pain in this situation, namely, that it is evoked from specific "pain points" and has these features: 1., an elevated threshold; 2., a non-noxious stimulus may be effective; 3., an increased latent period, whereupon there occurs 4., an *abnormally* unpleasant sensation which 5., outlasts the stimulus, 6., irradiates from the site of stimulus and 7., may be accompanied by vigorous withdrawal movements with vasomotor reactions and sweating; as further features, 8., such pain is poorly localized and 9., two point discrimination is impaired. These features, subsumed under the term "hyperpathia" by Förster, persist during the period in which pain is the only sensation obtainable from the zone of regeneration. But with more complete regeneration of the cutaneous network for pain, and later for touch, pressure and temperature, the hyperpathic features gradually disappear. Förster concluded that normally the system for pure pain is regulated by simultaneous stimulation of other sensory mechanisms, so that both inhibition and a greater precision temporally and spatially ensue. Anatomically one sees in the early painful phase of regeneration only thinly myelinated fibers, the larger axons with thicker myelin sheaths appearing later. This work in man is consistent with the conclusions drawn in 1911 by Ranson, an earlier S. Weir Mitchell orator, who studied in cats the entry zone of posterior rootlets into the spinal cord. A lateral unmyelinated bundle is relatively distinct from a medial myelinated fasciculus. When Ranson and Billingsley (9) in 1916 cut the unmyelinated sector, they eliminated the so-called pain reflexes of struggling and raised respiratory rate and blood pressure. Division of the myelinated fibers had little or no effect on these reflexes.

In another pathological state that occurs after herpes zoster, the post-herpetic pain likewise has not only the hyperpathic characteristics of provocation by touch or pressure with after discharge and irradiation from the stimulated site but also spontaneous severe pain. Noordenbos (10) and Weddell, studying intercostal nerves in the afflicted segments, found a huge increase in the ratio of thin to thick fibers in these as compared with corresponding normal nerves.

FIG. 1. Anatomy of sensory fibers entering spinal cord. Top: Myelin stained cross section of a cat lumbar spinal cord. Middle small diagram: Cross section of left dorsal quadrant (substantia gelatinosa stippled). Bottom: Main components of cutaneous afferent system described in text. (From Melzack, R. and Wall, P. D.: Science 150: 971–979, 19 November 1965. Courtesy of the Editor.)

The fundamental fact that an abnormal preponderance of small or C fibers in a peripheral nerve promotes a painful state is clearcut, but the mechanisms responsible for this have been obscure.

Recent studies by Wall and colleagues have given us the first specific clues as to how the input in the dorsal roots from the large, fast-conducting fibers interacts with that from the small, slowly-conducting fibers. Figure 1 helps us review the pertinent anatomy. At the top is a histologic section of the cat's lumbar spinal cord. The dorsal quadrant of the cord is shown in the small diagram in the middle. The stippled region in this is the substantia gelatinosa. The rectangular slab represented in the larger diagram below is a magnification of this region. The large cutaneous fibers cross it dorsally, sweep around medially and the terminal arborizations enter from ventrally. Branches of these fibers also run toward the brain in the posterior white column. The small cutaneous fibers indicated by dashed lines run directly into the substantia gelatinosa. The deeper-lying nuclei of the secondary afferent neurons shown as black spheres also have their dendrites arborizing in the substantia gelatinosa, whose intrinsic small cells are represented as open circles. The axons of these small cells modulate the activity in the terminal tree of both the large and the small entering fibers. They also run in the tract of Lissauer (LT) to neighboring segments of the substantia gelatinosa.

Mendell and Wall (11), recording from axons of single cells in the layer of secondary afferent neurons, have selectively stimulated either the large, low-threshold A fibers in the sural nerve supplying this area or, blocking these fibers by anodal polarization, have stimulated only the small C fibers. Figure 2 shows the ingenious way they have displayed their results. In the left half of the illustration one sees the random spontaneous activity of a single cell. We read straight up from the lower left hand corner in Japanese fashion; each dot represents one of the constant-sized, random spikes as the axon fires. The vertical time scale is in 100 msec. intervals. After each vertical trace the recorder moves a notch to the right and there ensues the vertical record of the spikes in the next 1000 msec., the activity for 26 seconds being shown. The right half of the illustration shows the axonal spikes in the same secondary afferent neurone evoked by stimulation of sural A fibers. Here the responses are so fast that the time scale is in 10 msec. in-

tervals. The lowest dot in each column is the stimulus artifact; each dot vertically above indicates again a single nerve impulse. The stimulus was repeated every second; each evokes a brief high frequency burst followed by a striking period of inhibition or silence.

Figure 3 permits us to contrast the response of a single axon to stimulation of C fibers alone on the left hand side with that of A fibers alone on the right. The vertical time axis is in 100 msec. intervals; the stimulus was again repeated once a second. The difference in behavior of the same cell to stimulus from the two types of input fiber is startling. After C fiber stimulation, there is for the first half dozen seconds only slight increase in the rate of spiking over the spontaneous random pattern. Then a progressively greater discharge occurs following each stimulus, but appears each time only 300 to 400 msec. after it. There is an arresting correspondence between this picture

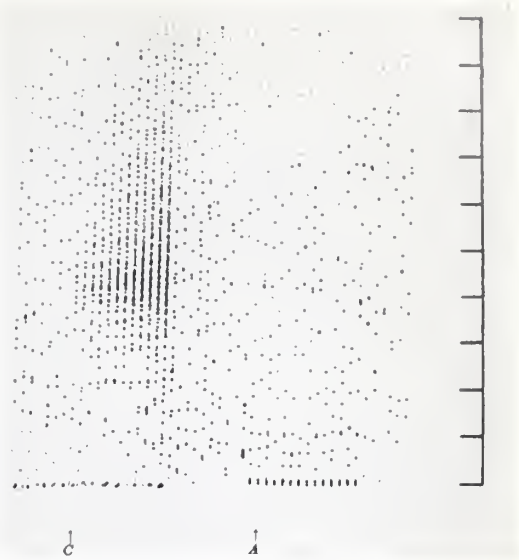


Fig. 3. Spike discharge of a single axon of a large cell in dorsal horn of spinal cord. Left: Activity evoked by stimulation of sural C fibers alone. Right: Activity evoked by stimulation of sural A fibers alone (see text). (From Mendell, Lorne, and Wall P. D.: Nature, 1965. Courtesy of Fisher, Knight & Co., St. Albans.)

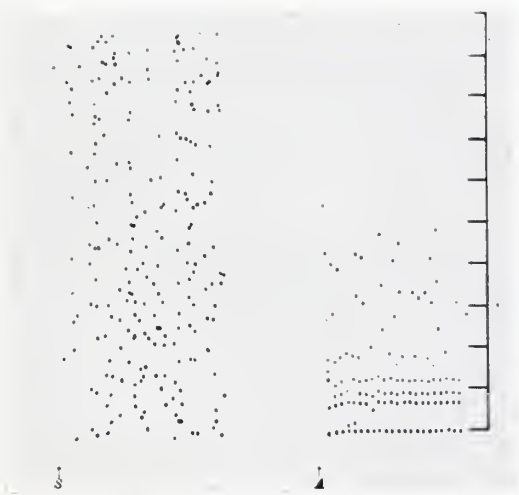


Fig. 2. Spike discharge of a single axon of a large cell in dorsal horn of spinal cord. Left: Random spontaneous activity displayed as a series of vertical columns lasting one second. Right: Activity evoked by stimulation of sural A fibers, described in text. (From Mendell, Lorne, and Wall P. D.: Nature, 1965. Courtesy of Fisher, Knight & Co., St. Albans.)

and the high threshold, long latency and protracted after discharge of clinical hyperpathia. And, as more segments of substantia gelatinosa become involved via the axons in Lissauer's tract, the pain irradiates to adjoining areas. This picture was obtained by using anodal polarization functionally to block A fibers just as neurotomy or the virus of herpes zoster deletes them to produce the clinical picture of hyperpathia.

Melzack and Wall (12) have integrated these and other facts into their new concept of the neural mechanism for pain, invoking a so-called "gate control system" as a modulator of sensory input. Figure 4 diagrams their notion as to how the gate at the substantia gelatinosa works. The plus signs indicate excitation; the minus signs, inhibition. Wall has shown that the small cells in the gelatinosa modulate the membrane potentials of the terminals of both types of afferent fiber so as to

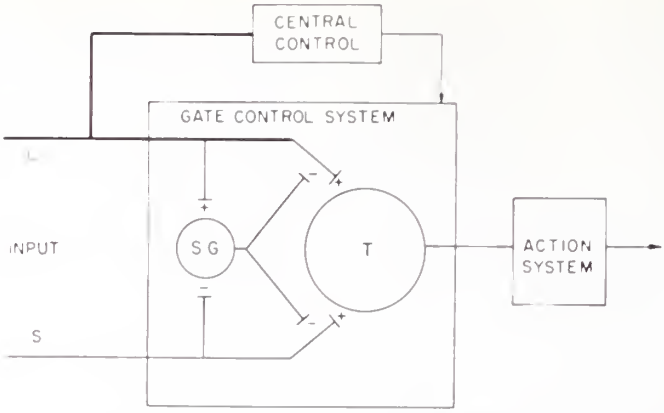


FIG. 1 Diagram of the gate control theory of pain. L: Fibers of large diameter. S: Fibers of small diameter. These project to substantia gelatinosa (SG) and the main secondary afferent neurone or first central transmission cell (T). See text. (From Melzack, R. and Wall, P. D.: Science 150: 971–979, 19 November 1965. Courtesy of the Editor.)

produce an inhibitory depolarization. Volleys in the large fibers promptly fire the secondary afferent neurone which he has called the first central transmission or T cell; but, if they at the same time increase the inhibitory effect of the gelatinosa cell, this negative feedback mechanism will temporarily stop the firing in this circuit and account for the silence we saw after the initial burst following A fiber stimulation. Volleys in the feebler small fibers have a slight effect at first, which becomes steadily stronger as a simultaneous inhibition of the gelatinosa inhibitor becomes ascendant, until finally there is a protracted discharge from the T cell or secondary afferent neurone from single C fiber volleys.

Turning from these animal studies to man, Wall and I asked ourselves if artificially intense stimulation confined to the low threshold A fibers could produce clinically demonstrable reduction of pain. We first tested ourselves, using 0.1 msec. square waves at 100 cycles/sec., sticking into our own infraorbital nerves needle electrodes insulated except for the tip. Tingling, buzzing or vibrating sensations were evoked in some portion of the sensory domain of our nerves at a voltage near the threshold. These were not unpleasant feelings and were always tolerable for an indefinite period. Moreover, we each had analgesia to pin prick in this area of paresthesia during the stimulation. But, both the objective sensory loss and our subjective sensations returned rapidly to normal when the stimulus stopped.

These observations did not answer the questions as to whether pain of clinical severity would be stopped and whether any initial relief would be maintained by continuing stimulation, or would continue between periods of intermittent stimulation.

Our first patient, Doris S., a young mother of two children had fractured her left radius at the age of 12 with a residual small limitation of extension at the elbow. In January 1963, at age 24, she first noted redness and stiffness of the left 4th and 5th fingers; two months later the whole hand became swollen and stiffer; warm water here felt "scalding hot" and woolen cloth or wood against the ulnar part of the hand produced "unbearable scratchiness." Anterior transplantation of the ulnar nerve at the elbow gave minor relief. By June 1964, light touch in the medial 3½ fingers, corresponding hand and medial ⅔ of the forearm produced an immediate intolerable feeling with an after discharge for several seconds which did not radiate. Pin prick was peculiarly disagreeable and the pain after a bump here lasted perhaps a minute. The symptoms were worse when she was mentally upset. She often put the limb in warm water to limber up the fingers; otherwise, she did not apply heat

or cold. There was a moderate brawny swelling from the elbow down, and the skin of the hand was shiny and sweaty. There was radiographic demineralization in the last three fingers. None of five stellate sympathetic blocks gave any help. Only transitory relief followed blocks of ulnar or median nerve, cervical epidural blocks plus physical therapy, and later posterior rhizotomies in two sessions extending from the lowest rootlet of C6 through the T2 level. By June 1965, despite analgesia and anesthesia of the medial 2½ left fingers and medial half of the rest of the limb, she was having constant burning pain with superimposed sharp bursts in the medial 3 fingers, intensified by moving them. She was taking much medication, including 50 mgs. of methadon per day. The pains were sufficiently decreased by rubbing her first two sentient fingers against cloth so that she did this almost constantly in all her waking hours, a fact which led us to hope that increased activation of A fibers would help her. And indeed stimulation of the hand and fingers by a mechanical vibrator to bombard the large afferent fibers gave good relief of the burning pain. Vibration for 10–15 minutes would give her one-half to several hours of relief. A convenient commercially made "cyclo-massage" hand unit was found to provide the vibration, but this gradually became less satisfactory. On October 9, 1965, Dr. Wall and one of us implanted a pair of silastic split-ring platinum electrodes around the ulnar and another pair around the median nerve in the arm, carrying the wires out of the skin at the midforearm. On the median nerve, 0.1 msec. pulses at 100/second and 0.6 volts provoked a pleasant tingling in the lateral three fingers and corresponding hand and stopped the pain in the medial three fingers and hand as well as tenderness in the 3rd finger and palm. Palpable or visible motor responses in the median nerve appeared at 0.7 volts. No sensation was provoked from the ulnar nerve, indicating that all of its fibers had been cut at rhizotomy. Relief and freedom of movement lasted for over half an hour after the median stimulation at sensory threshold. We removed the electrodes thirteen days later when we found that stimulation to the intact skin over the nerve at the wrist gave nearly as satisfactory relief. This external stimulation has been used for nearly two years, for about five minutes at a stretch, ten or twelve times a day. Slow but steady improvement has occurred. The burning pain has been largely eliminated; the hand is not constantly soaked in perspiration; she has finally stopped narcotics since February of this year. But, except during the actual stimulation, light touch to the 2nd and 3rd finger tips remains exquisitely unpleasant so that she cannot deploy them for specific tasks such as holding a vegetable she peels. She keeps the hand wrapped in a light wool shawl, but uses it.

A second patient, Kenneth S., age 51, in some ways like our first patient, also had pain in his left medial arm, forearm, hand and 4th and 5th fingers, treated by removal of a large protruded disc at the left cervical 6–7 level. He was at first relieved, but pain recurring at the original sites continued despite several other operations and sympathetic blocks, culminating in two cervical posterior rhizotomies from the left C7 through T2 rootlets. We first saw the patient in July, 1966, seventeen months after his last rhizotomy, at which time he was complaining of continuous pain in his left medial forearm "like a burning red hot poker" radiating into the 4th and 5th fingers. There were acute exacerbations in the area of sharp, shooting pain; these might be spontaneous or provoked by movements of the limb. He was frequently awakened out of a sound sleep at night with this severe pain and medications for it had been gradually increased to Pantopon 30 mgs. intramuscularly every four hours. Sensory loss was confined to the ulnar two-fifths of forearm, hand and fingers and consisted of zones of patchy analgesia to a 40-gram point and anesthesia to touch with cotton over about half of this area with hypalgesia and hypesthesia over the remainder. This is of course a relatively small area of total cutaneous denervation in the face of such an extensive rhizotomy.

Stimulation of the skin over the ulnar nerve at the elbow provoked no new pain, and each two-minute application of the electrodes gave him complete relief of his clinical pain for about two hours. He stopped the Pantopon at once and took only two tablets of codeine in the next four days. After seven weeks of two-minute bursts of stimulation at home, the burning pain was relieved for only an hour. In the hope of improving this, we implanted a pair of platinum electrodes around the ulnar nerve in the arm with wires leading to a subcutaneous receiver. Figure 5A shows the unit prior to implantation. Figure 5B shows it in the patient. For the first two to three months, relief lasted about forty-five minutes after each use of the stimulator, but then this duration decreased despite increased time and voltage of stimulation. By six months he was helped only during stimulation and new pains appeared in the arm and shoulder. The electrodes were removed nine months after implantation; the ulnar nerve looked and felt normal at that site.

Two other patients were similar to the two described in detail in that they probably had *intrinsic lesions in a peripheral nerve or root.* One had a gunshot wound

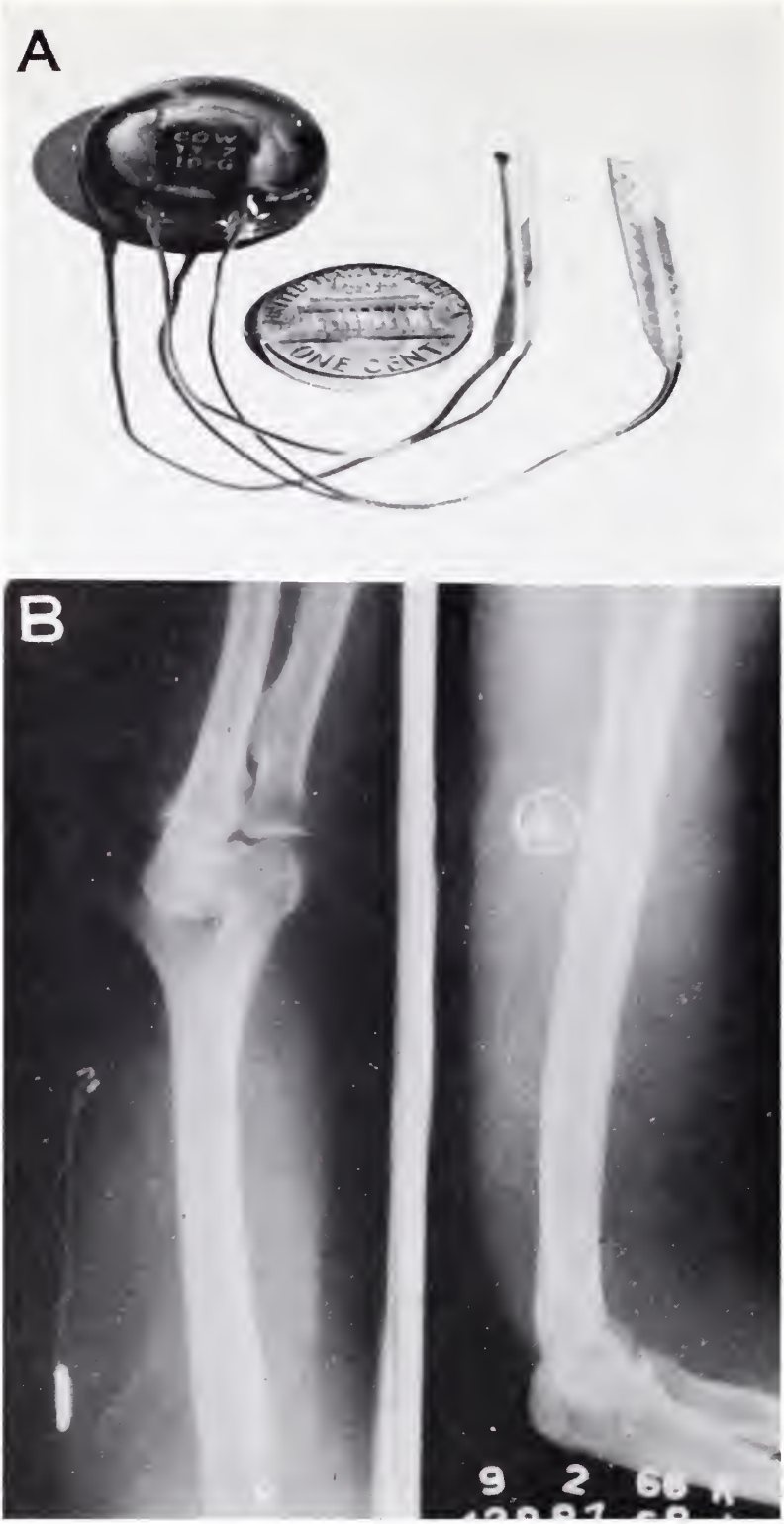


FIG. 5A Receiver connected to electrodes for subcutaneous implantation in man. A United States penny (diameter 1.85 cm.) is included to indicate the size of the unit.

FIG. 5B Subcutaneously implanted unit in middle third of arm of patient, Kenneth S. Receiver placed just below axilla.

of the ulnar fibers in the brachial plexus and the other a diabetic neuropathy with pain in the distribution of the superficial peroneal and medial plantar nerves. Two minute periods of stimulation at each of the three nerves at the parameters mentioned above produced buzzing, tingling or an electric feeling and stopped the clinical pain on each occasion for over half an hour. Pain in the first patients was referred to the 3rd and 4th fingers, a severe burning which did not appear until three days after the wound. It had been unaffected by an earlier operation on the brachial plexus and by sympathetic blocks. In the diabetic, the relief of her pain in the big toe and medial arch of the foot was accompanied by numbness and heaviness.

Possibly the disease in all four of these patients led to a deficient number of heavily myelinated fibers to provide inhibition of the C fibers, and the post-stimulation relief for over thirty minutes in them was related to our artificial supplementation of the A fiber effect.

There were 3 other patients who had pains in a lower limb related to metastatic carcinoma. Via a spinal puncture needle placed for a later phenol block, we introduced an electrode through whose uninsulated tip current was passed to a large indifferent plate on the skin. This evoked a band of tingling extending down the leg whose locus could be changed by rotating the patient in his long axis. Only when the region of evoked paresthesia coincided with that of the pain did this disappear. However, within five or ten minutes after a similar period of stimulation the pain was back to its original level.

In three other *patients with deep pain* we did not succeed in producing even temporary relief despite the fact that in one of them we wrapped our electrodes around the sciatic nerve. This patient's lesion was an operatively-proven arachnoiditis of the lower cauda equina.

In the first of two patients with the provokable paroxysms of typical *trigeminal neuralgia*, a bipolar 22-gauge needle thrust well into the infraorbital foramen was used. Stimulations up to five minutes produced paresthesias in the upper lip and gum and eliminated the triggering effect of touch to his trigger zone on the hard palate for fifteen to twenty minutes. The second patient was stimulated at a stage when he was getting poor relief from the previously effective 600 mgm. of Tegretol per day. Bipolar ball-tipped electrodes 1 to 2 cm. apart were applied over the auriculo-temporal nerve at the mandibular condyle for two minutes, evoking tingling in temple and mandibular ramus without an initial paroxysm and stopping those pains beginning just in front of the ear. The patient was then able to swallow water without intense pain for the first time in five days. A similar application over the infraorbital foramen gave temporary respite from attacks triggered from medial cheek and upper lip. Despite this hopeful beginning, the patient was not able, after intensive effort for five days, to bring his pains under satisfactory control with the cutaneous electrodes and stimulator. We relieved him by making a controlled radiofrequency lesion in the Gasserian ganglion and rootlets using an electrode introduced through the skin. The pains of classical trigeminal neuralgia appear to be related to abnormal routing of impulses provoked by touch because such a stimulus usually triggers a paroxysm more effectively than a pin prick. Hence, the fact that a barrage of impulses in the large fibers gave even transitory relief suggests that touch also sets up impulses in small fibers.

Hunter Shelden (13) has sought to stop trigeminal paroxysms by maintaining a refractory state in the pertinent peripheral trigeminal fibers rather than at their central terminals as we have done. He seeks to induce a chronic electrical depolarization of most of the fibers using a signal

at 14,000 cycles. His transmitter, housed in a standard flashlight case, is placed against the temple overlying a subcutaneously implanted inductor receiver. This is capable of providing up to 10 volts to the electrodes wrapped around the third trigeminal division. Shelden is encouraged by his results in 3 patients to date.

Our most sustained success with peripheral A fiber stimulation is in a 47-year-old woman who has had an atypical form of facial neuralgia for seventeen years. Localized to the left cheek it came at first in attacks lasting two to three days; by ten years ago the pain had become constant, waxing and waning, never disappearing. Periodic migrainous neuralgia (cluster headache) was suggested by left ptosis and redness of the left cheek when the pain was bad. External stimuli inconsistently worsened the pain. Two alcohol injections and my 1960 neurotomy of the second trigeminal division just behind the foramen rotundum gave complete relief during the months the area was analgesic. The foramen was filled with bone chips and wax, and severe pain did not again become a problem until March of this year. Then constant burning and provokable sharp stabs reappeared on a background of hypalgesia but normal touch throughout the left second division. Neither 300 mg. of Dilantin nor 800 mg. of Tegretol per day helped either type of pain. Stimulation via a pair of ball-tipped electrodes to cheek or upper lip promptly eliminated the trigger zones in hard palate and cheek, and the burning gradually subsided. Two minute periods of stimulation every hour did not eliminate the pain, but five minutes every hour or two at first nearly did so and later were a complete success. In this patient as in many of the others, the threshold to calibrated hairs rises for a few minutes after stimulation by a factor of 2 to 10, but soon drops to the original level. After two months of decreasing need for the electrodes she found it rarely necessary all summer. However, twice in the last month she developed a continuing pain she could not control with the stimulator. On each occasion a single dose of Demerol stopped the bad bout so that the stimulator could take over again.

A factor common to each of our three least unsuccessful long-term cases has been a preceding partial surgical denervation of the area of pain. For the near future, since changes of frequency and pulse duration have restored effectiveness of the stimulus signal in several patients, we are seeking to construct a simple take-home device which will give the necessary flexibility on this score.

Before leaving the subject of peripheral stimulation, one more clinical experience deserves mention.

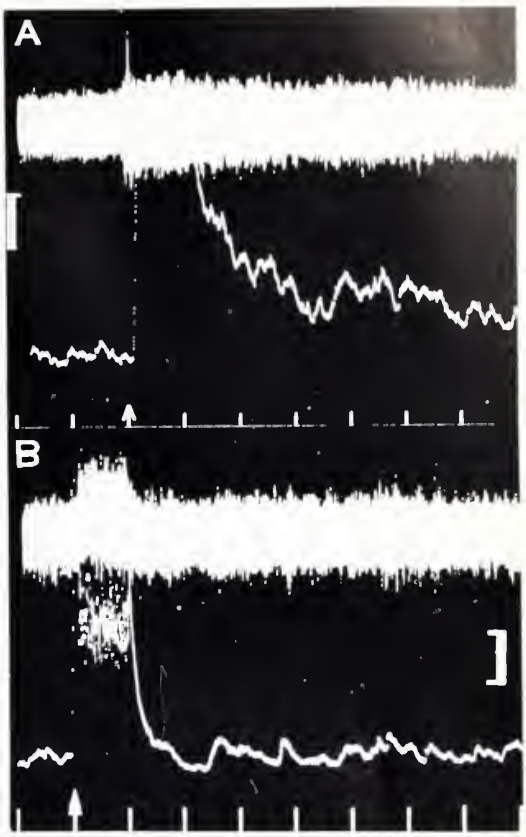
Our plan was to treat this particular patient's oropharyngeal pain related to a carcinoma at the back of the tongue by multiple rhizotomies in the posterior fossa. With her awake, each of the two rootlets of the ninth and the eight rootlets of the tenth nerve were isolated in turn around a gutta-percha strip. An unusually protracted stimulation of each had been carried out because pain in the general region of the patient's complaint had been produced from each rootlet. A sustained rise in blood pressure had also been provoked. Being reluctant to cut all the vagal rootlets or to do a bulbar tractotomy with the patient's blood pressure over 200 mm., I closed the wound with a view to reopening it in a day or two for the tractotomy. But to my amazement the patient had no pain at all for three months, although pre-operatively she required several doses of narcotics per day. The pain is now gradually recurring and we plan to implant delicate electrodes around the nerves, should the severity warrant it.

Inhibition by Stimulation of the Spinal Cord

There is also an ongoing, presumably constant, damping influence on pain related to fiber tracts in the posterior columns of the human spinal cord. Thus, Förster (8) pointed out that isolated lesions here have been associated with hyperpathia and/or spontaneous pains of appropriate distribution. His most convincing cases are those in whom his own precisely definable operative incision was correlated perfectly with the area of pain. In one patient with an intramedullary tumor extending from T9 to the medulla oblongata, the entire area of the posterior columns was sacrificed bilaterally in the midthoracic cord. This produced hyperpathia on both sides in the legs and in the abdomen up to the umbilicus. At a second operation in that patient only the right posterior column was sacrificed up to C2 with a

corresponding ipsilateral hyperpathia up to this level. In another case, that of an intramedullary cyst in the upper cervical cord, his incision into the right medial fasciculus, the column of Goll at the cervical 3–4 level, evoked hyperpathia and spontaneous pains ipsilaterally from level of the xiphoid process downward. In both patients the painful state was associated with a loss of proprioception and sensory localization in the affected area, and Förster attributed the pains to loss of inhibitory rather than activation of excitatory pathways.

Relevant experiments in cats have been reported recently by Shealy *et al.* (14). At certain sites in midbrain tegmentum and medulla first described by Collins and Randt (15), there is a prolonged after-discharge, occurring only following types of stimulation which in man would cause pain. This never occurs after touch, massage, vibration or movement of joints. Figure 6A shows the discharge sustained for many seconds after a 500 msec. tetanic electrical stimulus applied to a peripheral nerve. This prolonged after-discharge to a noxious stimulus is eliminated if an anodal current of 2 ma. is passed through a plate applied to the posterior columns of the spinal cord. Figure 6B illustrates the striking elimination of the after discharge in the midbrain by such a blocking current at the posterior columns. This is correlated with the behavior of one animal when awake with a chronically implanted platinum electrode over the cervical posterior columns. During the passage of a pulsed DC current, burning or prolonged pinching of the skin caused no apparent discomfort to the cat. Based on these observations, Shealy, Mortimer and Reswick (14) have implanted a vitallium electrode beneath the dura over the upper thoracic posterior columns in one patient with a carcinoma whose pain was in the right torso. Stimulation at 10–50 cycles/sec., 400 sigma and 0.8 to 1.2 volts on the



FIGS. 6A and B. Responses in cat mesencephalic tegmentum to electrical stimulus to a peripheral nerve. Abscissa: Time base in 500 millisec. intervals. Arrow: Start of stimulus at 60 volts, 500/sec, 0.5 msec. pulses lasting 500 msec. 6A: Lower trace shows an after-discharge which dies away gradually only several seconds after the tetanic stimulus. 6B: Lower trace shows elimination of this after-discharge when an anodal current of 2 ma. is passed through a plate applied to posterior columns of spinal cord. (From Shealy, C. N., Taslitz, N., Mortimer, J. T. and Becker, D. P.: Electrical inhibition of pain by stimulation of the dorsal columns—preliminary clinical report. Anesth. and Analg. 46: 299–305, 1967. Courtesy of the Editor.)

evening of operation abolished both his incisional and original pain. After five to fifteen minutes the pain would recur, but change in the frequency of stimulation stopped it. Although the patient had a buzzing sensation in his back and throughout his chest, motor power and the sensations to pin prick, touch vibration and

change of position were grossly intact. This differs from the temporary cutaneous sensory loss we have observed on similar types of stimulation to peripheral nerves. However, pressure on the Achilles tendon of their patient was felt only as touch. For a total of 11 of the next 21½ hours the pain was controlled by continuous stimulation without use of narcotics. These tantalizingly encouraging observations were then unhappily terminated by a cerebral embolus.

Inhibition of Pain by Stimulation of the Brain

Because of the much greater complexity of this structure, we do not have as many experimental data to guide our theoretical concepts or our clinical practice. Fabritius (cited by Förster, 8) correlated spontaneous pains with lesions of the posterolateral white matter of the cord and hypothesized a cortifugal inhibitory pathway for pain next to the grey matter. This is as yet unconfirmed. In Nauta preparations degenerating axons have been followed after small lesions either of the cuneate nucleus or the sensori-motor cortex into the substantia gelatinosa of the trigeminal subnucleus caudalis (16). This latter we know is concerned with pain and temperature. Presumably these tracts either facilitate or inhibit the primary input.

A number of empirical observations in man deserve mention. Heath (17) *et al.* in 1954 placed electrodes in the so-called septal area of the frontal lobes just in front of the hypothalamus. Passage of current at 3 to 4 milliamperes relieved pain in some cancer patients: single bouts of stimulation sometimes helped for as long as two to three weeks. Striking mood changes might occur. In one patient of Pool (18) and Heath, one of the electrodes apparently lay close to the supraoptic nuclei of the hypothalamus because its activation caused, in addition to smiling and euphoria, pilo-erection over the limbs, pupillary dilatation and a slight rise in blood pressure, followed by diabetes insipidus for three days. In two other patients of Pool and colleagues (19) with carcinomatosis, a temporary rage reaction took place. The electrodes proved at autopsy to be contiguous to the anterior commissure. The need for more information is apparent, and Pool has not continued to follow up his pioneering observations.

Our colleagues, Drs. Mark and Ervin, have another series of relevant observations incidental to a final objective of making thalamic lesions for control of pain or amygdalar lesions for temporal lobe epilepsy. In one of their patients, who also had pain in his left lower jaw, stimulation for several minutes of the left lateral amygdala relieved for thirty-six hours pain not relieved by Demerol. During the stimulation, this patient, usually surly and irritable, became euphoric and somewhat detached. The room seemed larger, the lights brighter. However, he did not find his medical attendants more brilliant at that point; they became instead strange and unfamiliar.

In another patient with advanced cancer, an inadvertent control experiment was carried out. On the left side stimulation for one and a half minutes at an electrode shown at post mortem to lie in the inferior third of the amygdala stopped the pain for up to twelve hours. Repetitions of this gave effective relief for the one week until the patient's death. Stimulations on the right side, presumably also in the amygdala, had been ineffective, but at post mortem this electrode was seen to lie just lateral to the amygdala. However, in another patient bilateral amygdalar stimulation did not stop pain. This is a large group of nuclei and the precise site and manner of stimulations are doubtless critical factors in the result.

In the *thalamus* of one patient with post-herpetic neuralgia, stimulation in the

nucleus ventralis posteromedialis at 50 sec. by 1 sigma biphasic square waves relieved the spontaneous pain when it produced a tingling in the same area.

The *caudate nucleus* has been shown by Buchwald and colleagues (20) to have both a facilitatory and inhibitory role influencing not only specific sensory input, but also the total behavioral state of an animal. Hence Ervin, Brown and Mark (21) studied the effect of caudate stimulation in cats on potentials evoked in the inferomedial thalamus by stimulation of the Gasserian ganglion at parameters which cause pain in man. The greatest inhibition of these evoked responses occurred with stimulation of the dorsolateral part of the caudate nucleus. These same authors then applied their findings to one patient with pain from advanced carcinoma of the pharynx and base of skull. Stimulus to a chronic inlying electrode, presumably in the caudate nucleus, with 1 msec. pulses at 10 to 40 per second gradually after fifteen to twenty minutes cheered up this surly man who said his pain was gone. The effective intensity produced no immediate sensation and no objective effect. After forty-five to sixty minutes of such stimulation, his salutary feelings might last for six to eight hours and give him a night's sleep free of his usual pain and need for narcotic medication. He was provided with a unit which produced a thirty-second train of pulses at 30 second once a minute whenever he turned it on. Several double blind studies were carried out deliberately, or accidentally by having leads become disconnected. It became clear that bonafide stimulation was required for the effects. During the last six weeks of his life the patient used his self-stimulator for one to two hours three times a day as the primary alleviator both of his pain and his anxiety, adding to this two to three 30 mg. doses of codeine. He himself described the subjective euphoric effects of stimulation as being like "two martinis," although the pain relief was far more than two such drinks provide. Unfortunately no autopsy was permitted, and the precise site of the electrode is unknown.

Summary

The hope that clinically effective pain relief may be achieved by stimulating inhibitory mechanisms is supported by four lines of evidence:

1. Experience of individuals in whom the emotional situation activated or facilitated inhibition of pain, e.g., wounded soldiers and mothers trained to undergo labor without analgesics.

2. Experimental stimulation of large myelinated fiber systems in animals, whereby responses of single cells fired by noxious stimuli were reduced.

3. Similar stimulation in normal man with production of objective analgesia in areas to which a buzzing or vibrating sensation was referred.

4. Clinical stimulation in a variety of painful states of a., peripheral nerves, b., spinal and c., cerebral structures with production of varying durations of relief of pain.

The subject is still in its infancy. With more thoughtful animal experimentation of the type initiated by Wall, and of Ervin and colleagues, and the aggressive application of such new knowledge under rigid controls in man, we may expect an accelerated understanding of how to inhibit pain experimentally and clinically.

References

1. Mitchell, S. W., Morehouse, G. R. and Keen, W. W.: *Gunshot Wounds and Other Injuries of Nerves*. Philadelphia, J. P. Lippincott Co., 1864.

2. Houde, R. W.: On assaying analgesics in man. Chap. 12 in *Pain: Henry Ford Hospital International Symposium*. Edited by R. S. Knighton and P. R. Dumke. Boston, Little, Brown and Co., 1966, pp. 183–196.

3. Wiersma, C. A. G.: A survey of the history of their discovery and of their occurrence. In *Nervous Inhibition*. Edited by Florey, Oxford, Pergamon Press, 1961, pp. 1–7.

4. Galambos, R., and Davis, H.: Action potentials from single auditory nerve fibers. Science **108**: 513, 1948.

5. Gerard, M. W.: Afferent impulses of the trigeminal nerve: The intramedullary course of the painful, thermal and tactile impulses. Arch. Neurol. & Psychiat. **9**: 306–338, 1923.

6. Beecher, H. K.: Pain in men wounded in battle. Ann. Surg. **123**: 96–105, 1946.

7. Head, H., Rivers, W. H. R. and Sherren, J.: The afferent nervous system from a new aspect. Brain **28**: 99–115, 1905.

8. Förster, O.: *Die Leitungsbahnen des Schmerzgefühls und die chirurgische Behandlung der Schmerzzustände*. Berlin and Vienna, Urban and Schwarzenberg, 1927, pp. 13–15, 77–79.

9. Ranson, S. W., and Billingsley, P. R.: The conduction of painful afferent impulses in the spinal nerves. Am. J. Physiol. **40**: 571, 1916.

10. Noordenbos, W.: *Pain*. Amsterdam, Elsevier Publishing Co., 1959, p. 182.

11. Mendell, Lorne, and Wall, P.: Responses of single dorsal cord cells to peripheral cutaneous unmyelinated fibers. Nature **206**: 97–99, 1965.

12. Melzack, R., and Wall, P. D.: Pain mechanisms: A new theory. Science **150**: 971–979, 1965.

13. Shelden, C. H.: Depolarization in the treatment of trigeminal neuralgia. Evaluation of compression and electrical methods; clinical concept of neurophysiological mechanism. Chap. 28 in *Pain: Henry Ford Hospital International Symposium*. Edited by R. S. Knighton and P. R. Dumke, Boston, Little, Brown and Co., 1966, pp. 373–395.

14. Shealy, C. N., Mortimer, J. T. and Reswick, J. B.: Electrical inhibition of pain by stimulation of the dorsal columns: Preliminary clinical report. Anes. & Anal. **46**: 489–491, 1967.

15. Collins, W. F., and Randt, C. T.: Midbrain evoked responses relating to peripheral or "C" fibers in cat. J. Neurophysiol. **23**: 47–53, 1960.

16. King, R. B.: Evidence for a central etiology of tic douloureux. J. Neurosurg. **26**, Part II: 175–180, 1967.

17. Heath et al.: *Studies in Schizophrenia*. Cambridge, Harvard University Press, 1961.

18. Pool, J. L.: Psychosurgery in older people. J. Am. Ger. Soc. **2**: 156–166, 1954.

19. Pool, J. L., Clark, W. K., Hudson, P. and Lombardo, M.: *Hypothalamic-Hypophysial Interrelationships*. Springfield, Illinois, Charles C. Thomas, 1956.

20. Bickford, N. A., *et al.*: The "caudate-spindle." Electroenceph. & Clin. Neurophysiol. **13**: 509–637, 1961.

21. Ervin, F. R., Brown, C. E. and Mark, V. H.: Striatal influence on facial pain. Confin. neurol. **27**: 75–86, 1966.

James Minor, M.D. (1785–1828): The Correspondence of a Medical Student, 1803–1807[1]

By JOSEPH IOOR WARING, M.D.[2]

JAMES MINOR (1785–1828), son of Garrett Minor of Sunning Hill, Louisa County, Virginia, decided early to study medicine. Upon completion of private schooling in 1804, he worked in the office of Dr. Carmichael of Fredericksburg, performing the miscellaneous duties of an apprentice. Encouraged by his future brother-in-law, George Watson, a student in the medical school of the University of Pennsylvania, he followed in Watson's footsteps to Philadelphia in January 1805. After graduation from the University in 1807, he made a trip to the rapidly-developing West but soon came back to his old home to practice.

The correspondence of James Minor with George Watson and others from 1803 to 1807, reviewed in this article, describes the impressions of these young students of the medical schools in Philadelphia and Edinburgh and of the great men who taught in them. Dr. Rush at the University of Pennsylvania and Dr. Monro at the University of Edinburgh particularly caught the criticism and praise of the young Americans' pens.

Many of Minor's letters are to or from his contemporary, George Watson, a friend from his own county. Watson, after a time in Philadelphia, moved on to Edinburgh, where he remained for a while, then continued his studies on the Continent, receiving at Paris a certificate of some sort. He then returned to Philadelphia and obtained his degree in medicine in 1809. His travels over, he established himself in Richmond, where he became prominent in medical and civic activities. From Philadelphia, George Watson wrote to encourage James Minor's interest in medicine and to tell his observations of his school:

Philadelphia, Dec. 11th 1803

...I am attending the lectures on Anatomy, chemistry, and the practice of medicine.... You will very readily conceive that my hands must be full, if I profit from all these lectures.... Besides the lectures above mentioned, I go three times a week to the almshouse, to see the practice there. The Almshouse is the place where all the poor, who are not able to gain a subsistence, the sick who have no friends to take care of them, foundlings etc. are carried and taken care of. There are about three hundred people in the house at present, fifty or sixty of which are sick. It is an excellent place to see practice, as there will be a variety of cases during the winter....

You will find when you attend Dr. Rush's lectures, that he thinks a knowledge of the mind very necessary for a physician. He says no man is fit to enter the cells of a hospital without it.... Dr. Rush advises his pupils to become apothecaries as well as physicians.

A later letter makes a point which seemed to have appealed to Watson, for he had noted it briefly in an earlier letter:

Fredericksburg, May 9th, 1804

...I think we might sometimes all relax our minds, with benefit as well as great pleasure to ourselves, in the company of the ladies. And remember that

[1] The papers of James Minor of Virginia are deposited in the Library of the University of Virginia, Charlottesville, Virginia. They were brought to the author's attention by Mr. Paul Stevens of Myrtle Beach, South Carolina. The author is indebted to Mr. Edmund Berkeley, Jr., Assistant Curator of Manuscripts, for permission to use the portions of the letters included in this article.

[2] Historical Library, Medical College of South Carolina, 80 Barre Street, Charleston, South Carolina 29401.

Dr. Rush says, a man can no more be a compleat practitioner of medicine, than he can be a compleat gentleman, without being acquainted with the nature and disposition of the fair sex and the manner of pleasing them. This, you are well aware, is only to be done by being frequently in their company....

Several months later he wrote:

Philadelphia, November 9th, 1804

...I have taken board with an excellent old lady in South 3rd Street No. 12.... My board is five dollars a week, and everything is found me but wood and candles.... I shall attend this winter Rush on the theory and practice of physic, Shippen and Wistar on Chemistry and Physick's private lectures on practical surgery.... I have heard the introductory and a few of the subsequent lectures of the four first mentioned professors. Dr. Rush enumerated the various means which have been and may be made use of by physicians in order to get themselves into business. He divided them into the just and honorable; the accidental; and the unjust and dishonorable. Under the first head he mentioned first a competent knowledge of their business; to be obtained by labour and diligence in the study of medicine; a constant and regular attention to those who have committed their health and lives to their care; Tenderness and a feeling behaviour in the sick room; and a number of other things of equal importance, but too tedious to be mentioned.... I was much surprised, after this lecture was over, to hear several young men, and those of esteemed cleverness, speak in a light manner of the subject of it, and the manner in which it had been treated. I believe "pearls are as often thrown before swine" here, as at any place on earth....

A month later he wrote:

Philadelphia, Dec. 13th 1804

...You wish to know the course of reading recommended by Dr. Rush. I never heard of any particular one advised by him. But all physicians concur in thinking anatomy, not only the basis of the science of medicine, but the branch, without a knowledge of which, not one rational step can be taken in the healing art. As you have asked me Dr. Rush's opinion about the preparatory studies of young men, who mean to become physicians, I would give you one of them. "It has been often said, that a young gentleman, before hearing lectures upon the practice of physick, should spend at least a year in an apothecary's shop. It would perhaps be more proper, that he should be a quarter of a year in a French cook's shop."

The young man who followed James Minor in the office of his Fredericksburg preceptor had this to say in a letter to Minor during the latter's year in Philadelphia:

Jan. 30th 1805

...Doct. Wistar you say is an able and great professor.... Do you know the epithet which the professors at Edinburgh bestow upon your favorite Rush? Viz. He is an enlightened QUACK. I think it is the expression as I had it from Carmichael.

In his reply James Minor wrote:

...Wistar is a fine old fellow, his seeming anxiety and desire to make the students understand everything he treats of are very engaging.

During his summer vacation George Watson wrote to Minor:

Louisa, June 2nd 1805

...My reading, which is the chief source I have here, of medical improvement, is miscellaneous. I alternately study anatomy, chemistry, materia medica, the practice of physic, surgery, and midwifery, as the passing scene suggests ideas. I have been employed for a good part of the last two days past in learning to apply, with propriety, neatness, and dexterity, the bandages for a fracture of the os maxillare inferioris, and that made use of by the late ingenious French surgeon, Mr. Desault, for a fracture of the clavicle. I flatter myself I have profited by the exercise. My text book, at present, is the Zoonomia. I find in it an inexhaustable source of ingenious reasoning, and precious facts. I wish I could *now* recommend to you to read this book, but I must tell you, I think you will read it with more profit, when you become a better Physiologist, than any one can be, without using anatomical demonstrations....

James Minor's brother, Peter, wrote to James telling of George Watson's travels to Edinburgh:

Sunning Hill, Jan. 3rd 1806

...His friends have heard from G. Watson in Edinburg. He wrote from there a few days after his arrival.... George I perceive speaks of the University there with no degree of partiality or favour. He says the principles of Brown are entirely proscribed in the University, to such a degree that the slightest introduction of any of them into a

thesis is alone a sufficient cause for rejecting it. From the tenor of his remarks it appears that the Professors there are learned men, with all the prejudices of monks, and by no means candid and liberal investigators of Truth, as the World would expect to find them....

George when he went from home, intended to graduate there but in his last letter, he seemed to hint a desire of giving his own country the preferment....

To James Minor he offered some brotherly advice:

...I think you attend too many professors. Dr. Barton might have been spared I think ... to the better employment of your time, and I have been told by several good physicians of late that lectures on Materia Medica are very unimportant....

I am highly pleased, and at the same time somewhat sorry to observe the Zeal and enthusiasm with which you speak of the different professors and particularly of Dr. Rush. It must be particularly pleasing to every American to reflect that this country has produced a man of such exalted talents and abilities, and in an art of science too, which has been heretofore mysteriously monopolized, and confined to 2 or 3 colleges of Europe. But this exalted idea of his greatness I fear will prove fatal to the reputation of many of his pupils. They think his Theory perfect, and therefore blindly adopt it without once attempting dispassionately to compare it with others and without that impartial and unprejudiced investigation of facts which the importance of the subject so justly merits.

In reply to these views James wrote to Peter Minor and warned against ready acceptance:

Philadelphia, Jan. 9th 1806

...The account which G. Watson gives of Edinburgh is truly unfavourable as the seat & mother of Medical Science: It's a proof of the narrow and contracted basis on which medical Truth and information exist when compared with the University of Pennsylvania, for here we are taught to believe that all the different systems of medicine possess some degree of merit, and that we may derive good from all.... None of the professors here are Brunonians, but they scarcely ever speak of Brown without making use of the epithets *great* and *immortal*....

A country cousin wrote:

Jan. 19th 1806

...How many professors do you attend? One I know you have, Dr. Benjm Rush, whose general information on all subjects moral political and physical entitle him to the fame which is attached to his name. But do not his manners very much assist him to display his talents and researches? Men of equal mind and information frequently fail to make equal impressions. He must possess to a high degree that peculiar and rare quality of introducing his thoughts with easy eloquence.... All the students with whom I have been acquainted dwelled so long on the character of this illustrious professor that the slight impressions made by the other members of the College of Physicians are almost entirely effaced....

Peter Minor wrote to James Minor:

Jan. 15th 1806

...Were I to give you my advice on this subject, I should tell you to receive every new position he lays down with strong doubts & distrust. His opinions may be correct, but a sensible man should never embrace them until after perfect conviction of their justness by comparing and collating them with every other which has gone before it. Do not rely implicitly on his assertions. You say he is an Orator, probably he can "make the Worse appear the better Reason". Besides he has to support his own theory and he will no doubt bend facts, like ozier twigs to his assistance. These observations are not made to derogate from the merits of Dr. Rush, but rather to engage you to follow his example, as he tells us in some part of his works, what researches he made, to arrive at any reputation as a physician....

Later, a fellow student (not identified) at home on vacation wrote to James Minor:

...I am obliged to you for giving me the sentiments of your correspondent relative to the comparative qualifications of the Philadelphia and Edinburgh professors. He seems to give a decided preference to the former.... There is one circumstance he has noticed, which with any *American* mind will weigh much in favor of the University of Phila. Tis here the student's mind is free and unfettered.... He is not compelled to adopt any particular doctrine of the professor. On the contrary he is generously admonished "to think for himself". How different is the conduct of the Edinburgh professors.... A respectable physician of this place who attended lectures there gave me the following

account of the tyranny of that school. A student the most distinguished for talents of any there became a candidate for a degree. In his dissertations he advanced and very ingeniously supported some new opinions of his own. It was enough that he did not tread the beaten track. His Thesis was rejected, nor was he allowed to graduate, till he recanted his former opinions and became an advocate for doctrines which he believed to be false.... That the above is true, the Thesises which emanate from that School sufficiently testify. What are they but the *echo* of the opinions of the professors?

I am sorry to learn that G. is such an enthusiast in error. Too blind an attachment to the fascinating theory of Brown, I am persuaded, has slain its thousands. But, notwithstanding, it deserves to be esteemed a most luminous work, and I shall ever view it as the first dawn of light which was shed on the Theory of medicine.... I look forward to graduation with "fear and trembling". As Cato says of Eternity, it is a pleasing, dreadful thought.

George Watson wrote from Edinburgh as follows:

Apr. 28th 1806

...The chemical lectures I have heard cannot be too much praised. They have been very comprehensive, and conducted with great ability, especially in the experimental part. The anatomical lectures have been very deficient. This you would not have expected, from the fame of the man who, in part, fills this chair. I mean the *present elder* Dr. Monro. The demonstrations were made by his son, who is adjunct Professor. He has no talent for lecturing. This, added to a great scarcity of subjects, has made the course very incomplete. Of the scarcity of subjects you will have an idea, when I tell you that all the demonstrations were made with only two. This deficiency is thought to be supplied, in a great measure, by the museum. But every one who has studied must know, that the only proper use of preparations is, to aid the explanation of the structure, and should in no respect supersede the examination of the parts in the fresh subject.

The elder Monro is coming to the conclusion of his lectures on Surgery. He has given us an immense amount of valuable information; but has consumed a great deal of time in commenting upon a multitude of instruments, both old and new. He has been a great improver of instruments himself; and he is, as Peter Pindar says, "a cormorant for fame", in this as every other part of his profession, he has spent not a little time endorsing the merits of his own improvements and discoveries, and vindication himself where it has been called a question.

I was once in hopes of finding an ample substitute to the lectures of the College, in those of Doctor John Barclay*, private lecturer here. This hope has been disappointed. He certainly has a much better talent for demonstration than the young Monroe. But I find that no knowledge of the subject, no talent for teaching, can supply the want of bodies, for the exhibition of the parts in their proper state. Doctor Barclay too has his *hobby*. This is muscular action. He has a book, now at the press, upon this subject. He is quite tiresome in enumerating the various actions, simple and compound, of the muscles. I am far from denying the usefulnes of this knowledge. I know its importance; and every Physician and Surgeon ought to study it. But I contend that it is only to be learned by one's own application to the subject.

I am much more pleased with Doctor Gregory, than when I heard him in the beginning of his course. He lectures in the order of Dr. Cullen's Nosology, and of course began with fever. In this he teaches nearly the same that his master did. This formed such a contrast with the abilities and genius which Dr. Rush displayed, in particular, on this subject, that I was much struck with it.... In all the diseases which are most prevalent here, I should think Dr. Gregory not inferior to anybody. He seems to have been a close observer of what takes place in diseases, and to have judged well of what he has seen. I think, however, he is too much opposed to what he calls Theories or what I would call by the less offensive name of Principles, in medicine. He does not seem to think that it is possible to arrive at true ones. For my own part... it appears to me that experience, which does not lead to some general conclusions, or *principles*, can be of but little advantage in any science.... And should it be said that the nature of medicine forbids general principles, it must follow that it is not a *science*, and that any *quack*, who can remember what physic he has given in a like disease before, will be equal to the Physician of the most liberal education and profound judgment....

James Alexander wrote:

Oct. 10th 1806

...I am sorry I should have expressed any dissatisfaction with regard to this university. I spoke of the deficiency of one of the anatomical professors, but said that deficiency was well supplied by Doctor Barclay. The opportunities of improvement in all the departments of science are so considerable, that if my fortune were sufficiently ample, I should

* John Barclay, 1758–1826, anatomist.

remain here for several years.... From Watson's statement of facts, and mine, respecting this university, you give the preference to Phila. My partiality to my Country would induce me to do the same, if candour would permit, but from a consideration of all that I have heard, and all that I have seen, I must still maintain the superiority of Edinburgh, which will not I hope be long, as the fame of Pennsylvania is daily increasing.... I hope one day to make you *viva voca* acquainted with the merits of a Gregory, How etc. etc.

James Alexander wrote to James Minor:

Jan. 3rd 1807

...I have almost caught your enthusiasm for the university of Pennsylvania. My patriotism would not permit me to think your description exagerated....

In his last letter as a medical student, James Minor took up the conflict which at that time was dividing the medical world. He said:

Jan. 14th 1807

...I have derived double the advantage from the present course of lectures than I did from the last.... Dr. Rush seems to concentrate all the powers of his mind, particularly against the nosology of Dr. Cullen; and he with triumphant confidence thinks he has established the unity of disease, and gave nosology its mortal wound. The arguments which Dr. R. makes use of on this occasion, if they do not establish truth on his side, they at least shake its foundations on the other; Dr. R. thinks that this distinction may be drawn between a nosologist and one who adopts his theory and principles of medicine: to acquire correct and proper ideas of medicine as taught by nosology requires an immense deal of time, labor and application, in committing to memory the genera, classes and species, and pathognomic symptoms of each disease, but the practice is attended with little or no trouble, or mental exertion, as the memory is only exercised in recollecting the pathognomic or peculiar symptoms which discriminate and characterize each disease; and after the disease is named they prescribe for its name, more than the verging states of the system. But the physician who practices by the principles delivered by him will soon acquire a sufficient knowledge of his profession to practice; and the practice will require the most unremitting attention and constant exertion of all his intellectual powers.... I have seen a patient in the hospital on one day affected with mania, on the next prescribing day he would be affected with Rheumatism, the next he would be affected with cough or pain in the side. Now Dr. Rush treats all these affections as one disease, viz Morbid Excitement in the blood vessels.... But nosology would have treated these three forms as three distinct diseases, and each disease would have had its peculiar remedies.

Watson's roommate wrote:

Edinburgh, January 30th 1807

...I cannot but agree with Dr. Rush that a single just principle in our science will advance it more in one year than a whole volume of uncombined facts will do in a century. Dr. Gregory discards theory and as he is extremely popular among the students, his example is pretty generally followed. The present fashionable study at Edinburgh is Chemistry, particularly including Mineralogy, which conducts to enlarged views of Geology. The Neptunian and Vulcanic theories, as they are fancifully termed, are somewhat warmly canvassed, and as they are supported by men of considerable eminence, with great ability.

Dr. Gregory is equally or more violently than Dr. Rush in his prohibition of spirituous liquors, and indeed he has cause to be so as I believe no people in the world, from the lowest to the greatest, drink more universally hard, than the Scotch. What think you of their taking a bumper of rum, immediately after dinner, to assist digestion, previous to their taking wine, toddy or punch....

Third S. Weir Mitchell Associates Banquet

The third banquet of the S. Weir Mitchell Associates was held at The College of Physicians of Philadelphia on Wednesday, November 1, 1967, to welcome new subscribers and to acknowledge the support given the project by the many Fellows and friends of the college.

PROGRAM

Welcome: Francis C. Wood, M.D.
President, The College of Physicians of Philadelphia

Our Library: Elliott H. Morse
Librarian

A Word of Appreciation: Jonathan E. Rhoads, M.D.
Honorary Chairman

Guest Speaker: Preston A. Wade, M.D.
President, The New York Academy of Medicine

A BRIEF HISTORY OF THE S. WEIR MITCHELL ASSOCIATES

In the fall of 1960, the Council of the College of Physicians passed a resolution establishing the S. Weir Mitchell Associates. The purpose of the newly formed group was to strengthen the Library by endowing journals in perpetuity through contributions of $1,000 each.

So enthusiastically did the Fellows support this new venture during the following year that eighty-three subscriptions had been obtained when the first banquet was held on October 31, 1962. The second dinner, held on September 30, 1964, saw this company increased to one hundred and twenty-four. At this, the third dinner of the Associates, we number one hundred and fifty-five, some of whom are corporate donors—medical departments, foundations, and societies. Several have followed their first endownment by a second, a trend which cannot be too highly encouraged!

S. Weir Mitchell Associates also include several non-Fellows whose endowments have been made in the name of a Fellow or of a loved one of the donor, and this support from outside the communion of Fellows is most gratefully acknowledged.

Many minds and hearts have committed their services to this project, far too many to name individually. Mention should be made, however, of the Officers of the College and the S. Weir Mitchell Associates Committee whose devotion and loyal support are responsible for many present accomplishments. The Fellowship is also to be commended for the enthusiasm with which it welcomed this program. The Officers of the College are most grateful for the generous response of its Fellows who in the brief period of six years have strengthened the Library by raising over $150,000 toward its support, a proud record indeed.

It is hoped that each succeeding generation of Fellows will continue to support this program and help bring to fruition the founders' dream of seeing every periodical in our Library endowed. This will require the combined efforts of all interested parties. Periodic reunions are anticipated to keep you informed of our progress, to sustain your interest, and to have you act as ambassadors on behalf of the S. Weir Mitchell Associates by enlisting others in this most worthy endeavor for this most venerable institution.

"FINANCES IS FUN"

By PRESTON A. WADE, M.D.

Mr. President, Mr. Librarian, Honorary Chairman, S. Weir Mitchell Associates, ladies and gentlemen:

You have given me a great honor in asking me to participate in this, the third S. Weir Mitchell dinner. I am pleased to represent your sister institution, the New York Academy of Medicine, and to bring to you greetings from that organization and best wishes from all of us for success in your efforts for the Library of The College of Physicians of Philadelphia.

I am not only pleased to be here as official representative of the New York Academy of Medicine but it is also a personal pleasure for me to renew my friendship with your president, Doctor Wood, with whom I have spent some pleasant days and evenings in cooperative lectureships. It is also my personal pleasure to be here with my old friend, Jonathan Rhoads, whom you know was just elected Chairman of the Board of Regents of the American College of Surgeons. The College is fortunate to have him as its leader for he will, I know, serve it wisely and well as he does the many other activities in which he is a leading figure.

When Dr. Rhoads telephoned me, on his way through New Hampshire, and indicated he had a request to make of me that I need not do if I did not want to, I was honored and flattered to think that he would make a detour in his trip to talk to me. I have always been awed by Dr. Rhoads, as I am sure many of you have been, and, when he makes a request of me, I am quite apt to say "yes" before I think. Before he arrived, I speculated as to what he might ask me to do and the most attractive idea that my imagination dreamed up was the possibility that he was too busy to continue as Chairman of the Department of Surgery at Pennsylvania and that he was asking me to take over for him. I must admit that the thought that I was two years past my retiring age did cross my mind but this thought was quickly dismissed when I reassured myself that, if they really got the *right man,* age would not make any difference. Other possibilities crossed my mind, and, when he did come and honored me by asking me to speak at this dinner, I was quite ready to say "yes". I must say, in the past few weeks, I have had occasion to regret this action since I have been trying to prepare something proper to say to you.

As a matter of fact, my memory is very poor, and, after accepting this assignment, time passed and as I was preparing my words to say this evening, I told my wife that I had forgotten entirely what my subject was and that I had better call Jon Rhoads and ask him the title of my speech. My wife said, "Oh, I wouldn't bother. It won't make any difference anyway. I have never heard you pay any attention to the subject when you start to talk".

It is always a pleasure for me to visit in Philadelphia. I have attended many meetings in your historic College building, at joint meetings with your fracture and trauma committees, with your Academy of Surgery and our New York Surgical Society, and the many historic meetings held here last year on the occasion of the Bicentennial Celebration. I find it somewhat frustrating, however, as a New Yorker visiting in Philadelphia because the New Yorker finds himself always second best. My hospital, the New York Hospital, which, I am proud to say, was granted its charter in the reign of George III in 1771, is only the second oldest hospital in the United States. Of course, I am always then asked, "Where was the first one?", and as you might guess, it was in Philadelphia—the Pennsylvania Hospital, founded in 1751. I have, in the past few weeks, read the exciting history of your College and, of course, discovered that your College was founded

in 1787 and our Academy of Medicine was founded in 1848. So, I find myself always being in the position of Number 2. All I can say is that being Number 2 makes us try harder so that is what I am going to do tonight—try harder!

I have had the pleasure of reading the very interesting history of your College entitled, "An Account of the Institution and Progress of The College of Physicians in Philadelphia". It was written by W. S. W. Ruschenberger, M.D., and was published in 1887 and was, evidently, inspired by S. Weir Mitchell. It is interesting to note that one of the several preceding organizations, from which the College was eventually founded, was one formed in 1727 by Benjamin Franklin—who seemed to have founded almost everything in Philadelphia. This famous club, The Junto, had, as its declared purpose, "the improvement of its members and their fellow citizens in virtue and practical wisdom." The club was limited to 12 members and their proceedings were designed to be kept secret but whisperings got out and caused "frequent application for admission to this charmed circle of leather-aproned philosophers." The book goes on to say that The Junto met every Friday evening at a tavern or ale house during its first three years and that sometimes the grave proceedings were enlivened with wine and song, some of which were written and sung by Franklin himself.

This brought to my mind the story of the founding of the New York Academy of Medicine which also had something to do with wine and song. The Editor's Table of the *Analyst,* New York December 1, 1846 contains the following: "The Fourth anniversary of the Society for the Relief of Widows and Orphans of Medical Men, (this certainly sounds like a typical Philadelphia organization, doesn't it?) was celebrated on Wednesday the 18th. About eighty gentlemen sat down to a beautiful entertainment prepared by Monsieur Peteler at his saloon, 579 Broadway. The Coup d'Oeil of the supper table was extremely good and the arrangements were highly creditable to the taste of the artist. Every delicacy of the season abounded upon the festive board, interspersed with many superb delicacies of confectionery of the lastest fashion; the creams, jellies, and pastry were of the finest description and the sparkling wine circulated freely about the table. The room was brilliantly lighted and the excellent arrangements made by the stewards, who, regardless of self, exerted themselves indefatigably in behalf of their guests, contributed to make it perhaps the most agreeable and elegant entertainment ever offered to the medical profession in this city. At the cross table, at the upper end of the room, sat the president, Dr. Delafield, having on his left Professor Mott and on his right the Rev. Dr. Vermilyea (who invoked the blessing upon the repast before him, briefly but expressively)."

The article continues: "After eight formal toasts had been offered and responded to, many volunteer toasts were given and throughout the evening many excellent songs and stories were given. The entertainment passed off in the greatest harmony. After the retirement of the venerable president and the major part of the company, about forty gentlemen remained to prolong the festivities, who voted Dr. Stevens into the chair (*sic.*). In consequence of the suggestion of this gentleman, they organized themselves into a meeting to discuss the propriety of establishing a local volunteer association, having for its objects the purification of the professional body and so forth, the objects of which when they shall have been matured by a committee appointed for the purpose, be made public and promised the highest interest and advantage."

Thus was conceived the New York Academy of Medicine. After reading the story of the meetings of Benjamin Frank-

lin's Junto, which preceded the founding of the College in 1786, and the founding of the New York Academy of Medicine, a cynic might smugly conclude that these two organizations seemed to have been conceived in ribaldry, but he would be forced to admit that the original objectives and ideals were sound and they have surely proved this to be so over the centuries.

It is interesting to note that from the beginning of both the College in Philadelphia and the Academy in New York the idea and dream of a library was one of the primary objectives of the institutions. On June 3rd, 1788, a committee of your College was appointed 'to form a pharmacopoeia for the use of the College' and on the same date, another committee to prepare a plan for the formation of a library. The committees appointed consisted of Drs. Jones, Wistar and Griffiths. The Fellows were requested to contribute to it. Dr. John Morgan, in 1788, sent a donation of 24 volumes to be added to the College library and again on January 6th, 1789, some medical books. A plan for forming a library, submitted by the committee on July 1st, 1788, was substantially that the secretary and censor should have charge of it and that the college should appropriate annually from the balance in the treasury at the end of each year, such sum for the purchase of books as might be expedient. The plan was approved March 3rd, 1789. This day may be said to be the day of the foundation of your library.

The Constitution of the New York Academy of Medicine outlines the name and object as follows: "This association organized for the advancement of the science and art of medicine and the maintenance of a public medical library and the promotion of public health and medical education, shall be called the New York Academy of Medicine." At the organizational meeting of the Academy the committee on finance was to recommend an annual tax and was "required to provide quarters for the library and museum."

So, from the inception of both these venerable institutions, the library was one of the important objectives and has continued to be a major activity of both organizations. To the credit of the profession and the laity, the founding and future growth of both libraries has been accomplished primarily through the dedicated efforts of the members of the medical profession and their friends, many of whom are the inspiring leaders of our cities. The S. Weir Mitchell association may well be proud of their accomplishments in this important effort. The New York Academy of Medicine struggled along with a few volumes from its establishment in 1847 until, in 1875, the Academy, for the first time, had a building of its own large enough to house its library. At this time, Dr. Samuel Smith Purple (that is really his name!) gave funds for the library and his remarkable collection is recognized today to be of great value financially and historically. As the Academy progressed, there was still no full-time librarian but the library served as a free public library in medical affairs. In 1924, Dr. Arthur Duel, who was important in the affairs of the Academy, met one day with one of the officers of the Carnegie Corporation and, in answer to a question of how the Academy was doing, he offered the information that what was badly needed was a new building and a new library. As a result of this conversation, the Carnegie Foundation gave $1,125,000 for this purpose and the Rockefeller Foundation gave an equal amount. With this money the Academy was assured of a new building, a new library, and a full-time librarian. At this time the Academy was in the old building on 43rd Street and a new site was bought at 61st Street for $750,000. The officers of the Academy, in their wisdom, held this property for six

months and then decided that parking facilities in this area would be so difficult that it would be better to buy a site farther uptown. So, the original site was sold six months later for a million dollars, a profit of $250,000 in the six month period and a new site bought for the $250,000. This is why I say Finances is Fun if it all works out this way!

I must say, after twenty years, the parking situation is just as bad now at 103rd Street as it was then at 61st Street. At any rate, it was a better financial deal and we were able to build our new building at 103rd Street and, at this time, we had the good fortune to be able to appoint a full-time librarian, Archibald Malloch, whom many of you knew, I am sure. He served the library from 1924 to 1946 and was succeeded by Janet Doe who served until 1956. We are pleased that Gertrude Annan, who came to the Academy in 1926, became librarian in 1956 and is still serving ably in that capacity. As you may know, our library is second in size to the National Library of Medicine in Washington. Number 2 again! We have 380,000 volumes, 4600 periodicals and we now have a staff of 52. I thought you would be interested to know that our budget expense for the library is now $475,000. This amount results from income from funds restricted for the library to the amount of $15,000, income from library activities $104,000, and income from general funds to the amount of $356,000. You may be interested to know that the endowment of the New York Academy of Medicine was, in 1946, $5,000,000 and now, due to wise investments and the good luck of the market, is $25,000,000. Again I say, Finances is Fun! Of this endowment, a large percentage of the income goes to the support of the library. In 1946, the total budget of the Academy was $364,000 and 35% of this, $128,000, went to the library. In 1967, with a portfolio of $25,000,000 and an annual budget of $1,125,000, 42% of the budget, $475,000 goes to the library.

We now have an exciting development, the Medical Library Center of New York, which is an organization of six of the medical schools in New York as well as the Academy of Medicine, the Rockefeller University, Memorial Center, and the New York Department of Health. These ten organizations pay $10,000 a year for a depository and distributing center for books in this area. An eight-story building, adjacent to the Academy, has been bought and remodelled for the purpose, at the cost of $950,000, and we now have a one and one-quarter million dollar foundation for building and operation. This is proving to be a successful venture and the Academy is one of the leading participants in this effort.

Now a word about S. Weir Mitchell. The New York Academy of Medicine has a collection of the writings of S. Weir Mitchell not as great as that of the College, of course, but of the few items worth remembering is a charming little book, a small volume, its calf binding worn, with the title, "A Madeira Party, New York 1895." More wine and song. On the flyleaf, in Dr. Mitchell's hand, are the following provocative lines: "Madam or maid who e'er you be who join my drinking bout, drink with my revelers all you please, no one can find you out." He continues in the tradition of the founders—wine and song—and he adds ladies. Among his letters is one we have photographed in the hope you will wish to add it to your files. It is a part of what must have been an interesting correspondence with Dr. James J. Walsh, of New York, the author of many histories. Of Lord Acton, Mitchell wrote, "His critical letters to Miss Gladstone are most interesting. I dimly remember meeting him as he was at one time a friend of Fanny Kimball, and I

saw him at the house of her daughter, Mrs. Owen Wister." The letter, dated March 1, 1913, was inspired by a comparison he had made between Luther and Lincoln. Dr. Mitchell's wide interests and acquaintances are reflected in this one letter. I hope you will enjoy this letter.

I would also like to present to you, on behalf of our library, an interesting document which is a part of the New York Academy of Medicine's collection of Italian broadsides dealing with public health problems. These broadsides, given by Mr. Mortimer Neinken of New York City, were manifestos and proclamations announcing quarantine and rules of behavior in epidemics in a given region. These proclamations of the 16th, 17th, and 18th Centuries were printed in large letters in a time when eyeglasses were not common and the printer of the proclamations saw fit to include his name in as large print as that of the official making the declaration.

Finally, I want you to know how inspiring it is to see this interested and vital group of citizens combining their efforts to enlarge the opportunities for the Library of The College of Physicians of Philadelphia. I am sure that you will be successful and I know you realize that you have close friends in your sister institution in New York City and that we will do all we can to help you in your efforts. I wish you the greatest success in your undertaking.

I am pleased to have been able to speak this evening with you. I salute you as the friends of the College Library. I am quite willing to admit that I and my colleagues play Number 2 to Philadelphia, but I warn you that when you are Number 2 you try harder, and who knows, we may one day be Number 1½!

S. WEIR MITCHELL COMMITTEE

George I. Blumstein, *Chairman*

Jonatham E. Rhoads, *Honorary Chairman*
Thomas M. Durant, *Honorary Chairman*
John H. Gibbon, Jr., *Honorary Chairman*

Charles W. Charny
A. Reynolds Crane
S. Leon Israel
Merle M. Miller
T. Grier Miller
Eugene P. Pendergrass
Joseph B. VanderVeer

S. WEIR MITCHELL ASSOCIATES

Albert Einstein Medical Center Medical Board
Albert Einstein Medical Center Medical Staff
Kenneth E. Appel
Howard D. Balin
S. Stanley Barr
E. Howard Bedrossian
Clayton T. Beecham
Moses Behrend
John V. Blady
George I. Blumstein
Molly G. Blumstein
Henry L. Bockus
Russell S. Boles
Solomon S. Bray
Clarence C. Briscoe
Clark E. Brown
Claude P. Brown
Buckingham Mountain Foundation
Carroll F. Burgoon, Jr.
W. Emory Burnett
Thomas Butterworth
Edward H. Campbell†
Richard H. Chamberlain
Charles W. Charny
David A. Cooper
Donald R. Cooper

Deceased †

John D. Corbit, Jr.
A. Reynolds Crane
C. Nelson Davis
J. Wallace Davis
J. Montgomery Deaver
Anthony F. De Palma
Robert D. Dripps
Thomas M. Durant
Joseph Edeikent†
Sylvan H. Eisman
Kendall A. Elsom
O. Spurgeon English
Lewis Kracer Ferguson
Harry Fields
Arthur K. Finkelstein
John K. Finley
Joseph L. Finn
H. Keith Fischer
John B. Flick
J. Gershon-Cohen
John H. Gibbon, Jr.
Glen Gregory Gibson
David A. Gold†
Myer H. Goldman
Benjamin Gouley
Roy R. Greening
Benjamin Greenspan
Robert A. Groff
Paul J. Grotzinger
D. Dwight Grove
Benjamin F. Haskell
Herbert R. Hawthorne
Philip J. Hodes
John H. Hodges
Orville Horwitz
John M. Howard
John Franklin Huber
Joseph E. Imbriglia
Harold J. Isard
S. Leon Israel
Robert H. Ivy
Julian Johnson
Charlotte B. Jorden
John J. Joyce, III
S. Richard Kaplan
Herbert T. Kelly
Richard A. Kern
C. Everett Koop
Sidney O. Krasnoff
John W. Lachman
Laennec Society
Warren R. Lang
J. Stauffer Lehman
George C. Lewis, Jr.
Herbert Lipshutz
Francis D. Lukens

Deceased †

James T. McCahey
Catherine Macfarlane
Robert L. McNeil Trust
William L. Martin
Merle M. Miller
T. Grier Miller
S. S. Mintz
John B. Montgomery
John Royal Moore
Craig Wright Mucklé
Stanford W. Mulholland
Paul Nemir, Jr.
Jesse T. Nicholson
George W. Norris†
Robert F. Norris
Obstetrical Society of Philadelphia
Nicholas Padis
Pathological Society of Philadelphia
Eugene P. Pendergrass
Pennsylvania Hospital—Department of Obstetrics and Gynecology
Mary DeWitt Pettit
Pfahler Foundation
Philadelphia Academy of Surgery
Philadelphia Psychiatric Society
Steven Phillips
George P. Pilling, IV
Donald M. Pillsbury
Domenic J. Pontarelli
Robert S. Pressman
Samuel X. Radbill
Thomas K. Rathmell
I. S. Ravdin
Lindley B. Reagen
Jonathan E. Rhoads
Teresa F. Rhoads
Brooke Roberts
Fred B. Rogers
Bernard J. Ronis
George P. Rosemond
J. Parsons Schaeffer
Lewis C. Scheffey
Harold G. Scheie
Gerard M. Shannon
Edwin W. Shearburn
Richard H. Shryock
Harry Shubin
Louis E. Silcox
Charles H. Sillars
Smith Kline and French Foundation
Jay Spiegelman
William A. Steiger
Joseph Stokes, Jr.
Strumia Foundation
Katharine Boucot Sturgis
Marcel S. Sussman
C. Newbold Taylor

Temple University—Department of Ophthalmology
Temple University—Department of Orthopedic Surgery
Leandro Tocantins†
Roderick L. Tondreau
Harry J. Tumen
Charles A. Uhle

Deceased†

Joseph B. Vander Veer
Jacob H. Vastine
Jack W. Welty
George Willauer
John C. Williams
William Wolgin
Francis C. Wood
Marston T. Woodruff
Barton R. Young

IN MEMORIAM

Brooke M. Anspach (1875–1951)
Edward H. Bedrossian (1887–1948)
Clara R. Behrend
Aaron Brav (1874–1944)
Mitchell Bernstein (1889–1964)
John Hanson Briscoe (1752–1796)
Charles L. Brown (1899–1959)
Helen H. Burgoon (1949–1955)
Howard Childs Carpenter (1878–1955)
Warren B. Davis (1881–1947)
John B. Deaver (1855–1931)
Deborah Eisman
Eldridge L. Eliason (1879–1950)
William E. Finley (1878–1920)
Otto Knut Olof Folin (1867–1934)
Charles Harrison Frazier (1870–1936)
John H. Gibbon (1871–1956)
Paul A. Gold (1921–1963)
Estella Groff
Kathy Lucy Grotzinger
L. M. Henry (1854–1942)
Arthur Carl Heublein (1881–1932)
Arthur Parker Hitchens (1877–1945)
J. Howard Hodges (1882–1948)
Louis Isard
Stephen Allen Kaplan (1940–1964)
Edward Bell Krumbhaar (1882–1966)
Catherine W. Lehman
Charles Lester Leonard (1861–1913)
Walter I. Lillie (1891–1947)
Benjamin Lipshutz (1889–1960)
Charles-Francis Long (1898–1952)
James Reid Martin (1887–1956)
William Fisher Norris (1839–1901)
Francis R. Packard (1870–1950)
Arthur Padis (1897–1918)
George E. Pfahler (1874–1957)
Rosinto Pontarelli (1895–1952)
David Riesman (1867–1940)
T. William Roberts
William Egbert Robertson (1869–1956)
Lawrence H. Rogers (1883–1959)
Bessie Ronis
Sadie Goldman Schwartz (1910–1946)
J. E. D. Silcox (1870–1945)
John and Rose Spiegelman
William J. Taylor (1861–1936)
Abraham Trasoff (1888–1945)
Alexander A. Uhle (1874–1916)
Edward Weiss (1895–1960)
Israel and Rose Wolgin

Memoir of Edward Thomas Crossan 1890–1966*

By JOSEPH L. BEARDWOOD, JR., M.D.

Edward Thomas Crossan was born in Wilmington, Delaware, on July 23, 1890. His early education was in the Wilmington school system. He was graduated from Salesianum Preparatory School in 1908, and at an early age he made obvious his determination to study medicine. He attended Georgetown University for one year and was graduated from the School of Medicine of the University of Pennsylvania in 1913. From October 1914 to January 1917, he served his internship and preceptorship under Dr. Astley P. C. Ashhurst at the Protestant Episcopal Hospital.

On January 16, 1917, Dr. Crossan married Elizabeth Clark of Wilmington, and three days later the young married couple sailed to France for service with the American Red Cross Hospital in Neuilly-Sur-Seine under the command of Dr. James P. Hutchinson.

In April 1917, diplomatic relations were broken with Germany. The hospital which had been founded by the Americans in 1914 was at this time taken over by the United States Government. In July 1917, the hospital was commissioned as the American Red Cross #1. It was staffed by American and French physicians. Dr. Crossan was commissioned as a First Lieutenant. This hospital provided the first exposure of many graduate interns to the care of war casualities. Soon Pennsylvania Hospital, University of Pennsylvania Hospital, Jefferson Hospital and Johns Hopkins Hospital sent units to augment the service. In the spring of 1920, Dr. Crossan was transferred to the American Ambulance #3 in Paris. Upon his return to the United States in May, 1920, he received his honorable discharge from the military service at Fort Dix, New Jersey.

Resuming civilian practice, he was appointed to the surgical staff of the Episcopal and Orthopedic Hospitals as an associate of Dr. Ashhurst. He became Chief of Surgical Service "A" in 1932; also, he served as secretary of the staff of the Episcopal Hospital for many years.

Dr. Crossan was appointed to the Academy of Surgery in 1919; he delivered the annual oration of the Academy in 1929 and for many years he was Chairman of the Program Committee.

He was a member of the Philadelphia County Medical Society, the Medical Society of the State of Pennsylvania, American Medical Association, Fellow of The College of Physicians of Philadelphia, American College of Surgeons (taking an active part on the Committee on Trauma), World Medical Association, the Founders Group of the American Board of Surgery, and the Military Order of Foreign Wars. As a member of the International Society of Surgery he already had plans made to attend the 1967 Surgical Congress in Vienna.

He was Assistant Professor of Surgery of the University of Pennsylvania School of Medicine and Resident Surgeon of the Lumberman's Mutual Casualty Company. He was a lecturer in Surgical Pathology and Applied Anatomy which gave him a grasp of surgical principles.

In clinical surgery he acquired a mastery of technique and judgment. He wrote well and talked well, as he was fluent in foreign

* Read before The College of Physicians of Philadelphia, 6 December 1967. Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

languages. He contributed papers on a great variety of surgical subjects. Because of his keen scientific observation, he often challenged some of the routine, accepted methods of treatment of the period. Thus, he became controversial, especially in the management of osteomyelitis. He was far ahead of his time in this malady. He was influential in introducing the color green in the operating room, and he was an advocate of early ambulation of patients.

He was fortunate in having an understanding and devoted consort who was always at his side. He had much admiration for the arts and music. Dr. and Mrs. Crossan were patrons of many performances of the opera and the Philadelphia Orchestra.

He was an avid reader and stamp collector, a collector of First Editions, Fine Binding, Fore Edge. Travel was a joy because of his knowledge of foreign languages. The theatre, music, books and travel were all his interests. Dr. Crossan was most fortunate in having a wife who was interested in the same things he was and after his retirement I am sure she was a tremendous partner in his many activities.

Upon his retirement from the practice of surgery, he not only kept his interest in the cultural events of the city as well as in scientific affairs but he also became a student in geology and enrolled in that course at the University of Pennsylvania.

He was a member of the Philadelphia Society for the Promotion of Agriculture, better known as the "Farmers Club," an organization which dates back to Colonial times.

I was fortunate to get to know Dr. Crossan in his later years as a patient. His interests were varied, as I have indicated. His integrity and selfless living made him a very fine friend and very thorough gentleman. I think that Dr. Crossan's friends will agree that in his life there were no "grays." Things were right or things were not right. He himself lived by the high standards which he set for others, and, although I am sure that many of the young men who knew Dr. Crossan thought he was unreasonably strict about many matters, that was the way Doctor Crossan lived and the way he liked other people to live. His contributions to the medical life of Philadelphia are not confined to the papers he wrote or to the surgery he did but extend to the number of young doctors whose lives he influenced in the very formative period of their medical careers. He was very approachable. Dr. Crossan was a fine gentleman and a great credit to the medical profession.

Dr. Crossan died of a coronary on September 11, 1966, at Abington Hospital.

Memoir of Damon Beckett Pfeiffer 1878–1966*

By J. MONTGOMERY DEAVER, M.D.

Dr. Damon Beckett Pfeiffer of Meadowbrook, Emeritus Chief of Surgery at Lankenau Hospital and Abington Memorial Hospital, died on January 6, 1966, at Lankenau Hospital at the age of 87.

A native of Williamstown, New Jersey, Dr. Pfeiffer was graduated from Princeton University, *magna cum laude,* and received his medical degree from The Johns Hopkins Medical School. He served his internship and preceptorship in surgery at Lankenau Hospital under Dr. John B. Deaver.

During World War I, he was in command of a U. S. Army base hospital in Toul, France. He was discharged with the rank of Lieutenant Colonel.

Among his many professional organizations, Dr. Pfeiffer was a member of the Philadelphia Academy of Surgery, American College of Surgeons, American Surgical Association, a Fellow of The College of Physicians of Philadelphia and a past-president of the Philadelphia Academy of Surgery.

He was an associate professor of surgery at the Graduate School of Medicine of the University of Pennsylvania and was the author of numerous articles on surgery.

Dr. Pfeiffer's wife, the former Elizabeth Reeves Howell, died on December 27, 1965. He is survived by a stepson, Charles Howell.

He was a strong personality with strong opinions and ardent enthusiasms. Among his particular interests were current events, shooting, bird dogs and, most particularly, Princeton University.

He was a quiet philanthropist. In 1961 he won the Humanitarian Award from the Chamber of Commerce of Monroe Township (his home town): "For philanthropic efforts and manifestations in promoting fellowship and the welfare of the community." He was a generous contributor to the Lankenau Hospital, to Princeton University and to the Library of our own College of Physicians.

Dr. Damon Pfeiffer was respected and beloved by his patients, by his intern and resident staff and by his assistants and associates. He was a surgeon's surgeon.

* Read before The College of Physicians of Philadelphia, 6 December 1967. Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

Memoir of James Ewing Cottrell 1898–1967*

By EDWARD ROSE, M.D.

James Ewing Cottrell was a descendant of Scottish and English forebears who emigrated to this country in the eighteenth century and eventually settled in the Appalachian regions of east Tennessee and southwestern Virginia. Some of them bore arms in the Revolutionary War and in the Army of the Confederacy. His father practiced dentistry in Knoxville, Tennessee, where Jim was born on November 10, 1898.

After two years at the University of Tennessee, he entered the School of Medicine of the University of Pennsylvania from where he was graduated in 1922. Following an internship at the Episcopal Hospital in Philadelphia, he served as resident in medicine at the Hospital of the University of Pennsylvania, an appointment which at that time covered only one year of service. He then entered the practice of internal medicine as an associate of Dr. Joseph E. Sailer, a distinguished clinician of the period. He also established an affiliation with the School of Medicine and the Hospital of the University of Pennsylvania which lasted until 1946. He was a member of the staff of the Endocrine Clinic there and attained the rank of Associate in Medicine in the School of Medicine. He was also on the staff of the Presbyterian Hospital. He was interested in anthropometry and in the treatment of rheumatoid arthritis, and contributed several papers on these subjects.

During World War II, he served with the 20th General Hospital in Assam and later with the 142nd Hospital in Calcutta as chief of medicine, with the rank of lieutenant colonel. After a brief resumption of private practice, in 1946 he entered the Veterans Administration where he served until his retirement in 1963. He was successively Chief of Medicine at Kennedy Veterans Administration Hospital in Memphis, Manager of the McGuire Veterans Administration Hospital in Richmond (where he was also Associate Professor of Clinical Medicine at the Medical College of Virginia), and, finally, Area Chief of Internal Medicine at the Veterans Area Medical Office in Trenton. His retirement was forced by ill health, and after a prolonged illness he succumbed to complications of Parkinson's disease at his home in Medford Lakes, New Jersey, on July 16, 1967.

He was a member of the Sons of the Revolution, The College of Physicians of Philadelphia (of which he became a Fellow on May 12, 1930), the John Morgan Society, the American College of Physicians, American Federation for Clinical Research, and the American Association for the Advancement of Science.

Jim Cottrell was an astute, thorough, and thoughtful clinician, and a scholar whose interests overflowed the limits of his profession. He was widely read and knowledgeable in history and the literature of contemporary culture, and was particularly interested in literary curiosa. His favorite recreational outlets included the library, the bridge table, and the after-

* Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

dinner conversational group, where his pungent philosophy and dry wit were always in evidence.

In 1929 he was married to Elizabeth Murray of Harrisburg. Two sons were born of this union; the elder, James, is an engineer; the younger, Dr. David E., is a staff member of the Department of Orthopedic Surgery at the Hospital of the University of Pennsylvania.

Memoir of John A. Brooke 1874–1967*

By WILLIAM L. MARTIN, M.D.

John A. Brooke was born near Glenside, Pennsylvania, on October 24, 1874. He attended public schools in that area and later was graduated from Central High School in Philadelphia. He was graduated from Hahnemann Medical College in 1896 and interned at a Children's Hospital at that time at Broad and Girard Avenue. Until 1911 he practiced in Wilkes-Barre, Pennsylvania, doing general practice and some surgery. He then went to Europe to prepare himself for specialty work in orthopedic surgery. This included study in Vienna and Bologna with short periods in Liverpool and Zurich. On his return he was house surgeon at the Hospital for Ruptured and Crippled in New York City for two years. He began the practice of his specialty in Oklahoma City and taught at the University of Oklahoma Medical School. In 1918 he returned to Philadelphia and, except for about one year of service in the U. S. Army Medical Corps in World War I, was on the staff at Hahnemann Hospital until his death on January 28, 1967. He was head of the Department of Orthopedic Surgery at Hahnemann for twenty-five years, and, when he retired from that post, he continued in private practice until December 1, 1966. In addition to his work at Hahnemann, he served as a consultant for the commonwealth Crippled Children's Program. This meant long, tiring trips throughout the state, sometimes seeing as many as one hundred crippled children a day. He continued in this work until five years prior to his death.

For relaxation, Dr. Brooke turned to bridge and golf. He was a member of the hospital bridge group and a member and one time president of the Doctors' Golf Association. He was a small man, short and very slender, but he had unusual stamina and vigor. It is told of him that on a visit to the Grand Canyon he walked to the bottom of the canyon and back to the top in one day, an exhibition of endurance not often surpassed by sturdier men.

Dr. Brooke was elected a Fellow of The College of Physicians on January 7, 1953. He was a Fellow of the American College of Surgeons, the American Academy of Orthopedic Surgery, the Philadelphia Academy of Surgery, and many social groups.

He was married to Ann Fogel in Wilkes Barre in 1903. They had no children. Mrs. Brooke was a completely helpless invalid for the last two years of her life, and John was untiring in his devotion and care. After her death on April 23, 1966, he went to live at the Union League. This life did not suit his active disposition; he said that there were only a few old men around the Union League at night and it was too quiet for him. He married Mrs. Esther Cannon shortly after this. While they were on a vacation in Florida, he suffered a coronary occlusion and was brought to Hahnemann where he died.

This dapper man, active and alert at the age of 92, will be long remembered. Not many men have the good fortune to live as many years or to accomplish so much good. It can well be said that he was liked and respected by all who knew him.

* Prepared and published at the request of the Council of The College of Physicians of Philadelphia.

President's Address: The College of Physicians of Philadelphia*

By FRANCIS C. WOOD, M.D.

"The evil that men do lives after them, the good is oft interred with their bones!" The first time I read that statement when I was in preparatory school, I was skeptical of its universal truth. As the years have gone by, I have become convinced that Mark Antony had his tongue in his cheek when he said it. Certainly it is inappropriate as far as this College is concerned.

Think of the activities of George B. Wood, S. Weir Mitchell, T. Grier Miller, Richard A. Kern, and innumerable former presidents, officers and Fellows. The good that they have done certainly lives after them. It would seem more accurate to say that the evil has oft been interred with their bones.

The good things that occur during the first year of any president's term in office are almost entirely the good that the last president has done, which lives after *him*—the results of things he started. On the national political scene, I never heard this mentioned, but here in the College it is obviously true.

The corollary to these introductory remarks is obvious: the good things that have happened here this year are almost all the result of the wisdom, initiative and imagination of last year's president, John H. Gibbon, Jr., and his Council and Committees. Moreover, he has given a great deal of time to the College this year, serving very actively on the Council and on six other very important committees—Censors, Nominations, By-laws, Building, Finance, Planning; he has taken two trips to Washington, D. C., this year on our visits to the officials of the National Library of Medicine, to support our application to become a regional medical library.

I wish to call attention to and mention my gratitute for Dr. Gibbon's unreserved help during the past year. In giving you a report this evening on College affairs during 1967, I am therefore in the pleasant position of being allowed to boast of John Gibbon's accomplishments.

I have already made a report to the Fellows at the College dinner on November 10 which will be published in the *Transactions*. Consequently, all that will be done this evening is to outline some of these events, and bring you up to date on recent occurrences.

1. We have negotiated our contract with the National Library of Medicine to become their second Regional Medical Library (Harvard was the first). All that is needed now is to have the funds appropriated. The latest information is that this may occur in May 1968. If all goes well, we will probably begin functioning as a regional medical library in the summer or autumn of 1968. We will need 18 more people on our staff to carry out this responsibility, and the problem before us is—where will we house them? I shall report further to you by mail when the time is ripe.

2. We are planning a re-organization of the College accounting procedures. This is necessary because of the need for budget management of a type that will enable us to make complete reports to the government on our grant.

3. We are studying our building needs with real estate, architectural and engineering consultants.

4. We are reviewing and rewriting our

* Annual Report of the President, The College of Physicians of Philadelphia, 3 January 1968.

by-laws with the objectives in mind of streamlining and simplifying our procedures and getting them in line with thoughts we have for the future of the College.

5. We have an outside visiting committee for the library appointed for the coming year to make sure our plans are not too circumscribed or provincial.

6. We are strengthening our administration.

7. We are entering the field of public health and public welfare with two relevant symposia this year. If this proves a constructive move we will continue this activity.

Thus, the ball seems to be rolling along in a sound direction with deliberate speed.

Exactly 181 years ago last night, January 2, 1787, in a building at 4th Street below Arch, thirteen fellows met and founded this College. The thought of that gathering just yesterday brings the event close enough to send pleasant shivers down the spine. Yet, the fact that it happened 181 years ago helps to put our present activities in better perspective and makes us realize that we must not be in a hurry. Hurrying, you know, does not indicate the speed *at* which you go, it merely indicates the disturbed state of mind *in* which you go. Although we should not hurry, we must proceed with deliberate speed. There is much to be done if we are to be worthy of our heritage.

I could go on at great length about details and future plans, but I shall conclude my remarks with a few words of recognition to several individuals for outstanding services. This wonderful old institution has gone rolling along for nearly two centuries because of the loyalty of *all* the human beings doing their daily jobs; and it may be improper to mention anyone specifically.

Yet, the regional medical library grant would not be in the offing if John Franklin Huber had not forged our regional medical library committee into a capable, coherent, constructive group. Drs. Kern, Pillsbury and Clark and several others played important roles in setting up relations with the National Library of Medicine. Yet, the biggest job of all, in this regard, was done by Elliott H. Morse, who gave up his summer vacation to write the grant request. It was a superb accomplishment. Moreover, he "carried the ball" brilliantly during the Project Site Visit on September 29 and during the process of negotiating the details of this grant on December 4. Finally, I want to thank very specifically our Vice-President and the Chairman of our Finance Committee, George I. Blumstein, who has performed the miracle of getting us on the right track in all our financial administrative affairs. We are in the black this year. These individuals deserve our applause!

Report of the Secretary for the Year Ended December 31, 1967

		(Attendance)
Stated Scientific Meetings		
January	The Fifty-first Nathan Lewis Hatfield Lecture John Rock, M.D.	131
February	The Ninety-second Mary Scott Newbold Lecture Eugene A. Stead, Jr., M.D.	171
March	The Forty-sixth James M. Anders Lecture William H. Stewart, M.D.	216
April	Joint Meeting with the Philadelphia County Medical Society at the Philadelphia County Medical Society. Presentation of Certificates to Physicians who have completed fifty years in the practice of medicine. Certificates awarded by J. Everett McClenahan, M.D., President, Pennsylvania Medical Society. Presentation of the Annual Kenneth E. Appel Award to Elliott M. Heiman, M.D., The Institute of the Pennsylvania Hospital, by Paul J. Poinsard, M.D., Chairman, Appel Award Committee. Presentation of Awards of Merit for Voluntary Service in Viet Nam to Warren R. Lang, M.D., John M. Howard, M.D., and Anthony F. DePalma, M.D. Presentation of the Strittmatter Award to John Royal Moore, M.D., by Horace T. Caswell, M.D., Chairman, Strittmatter Award Committee.	
May	The Second Theodore F. Bach Memorial Lecture Gerald P. Rodnan, M.D.	81
October	The Eighteenth S. Weir Mitchell Oration William H. Sweet, M.D., D.SC.	82
November	The James M. Anders Symposium, A Community Health Forum on Air Pollution, presented jointly by The College of Physicians of Philadelphia and the Philadelphia County Medical Society, sponsored by the James M. Anders Fund. Chairman: Francis C. Wood, M.D. Moderator: Leroy E. Burney, M.D. Participants: Richard L. Riley, M.D. Gordon Larson Austin N. Heller	250
December	The Tenth Benjamin Musser Lecture on Clinical Medicine Herbert L. Ratcliffe, SC.D.	115

	(Total Ballot)
Regular Business Meetings:	
January 4, 1967	322
February 1, 1967	225

March 1, 1967	263
May 3, 1967	284
October 4, 1967	253
December 6, 1967	313

Sections of the College	(*Membership*)
Ophthalmology	81
Otolaryngology	41 & 4 Honorary & 4 Dues Remitted
Public Health, Preventive & Industrial Medicine	46
Medical History (Fellows & Friends of the Section)	118

Membership:

	Fellow	Non-Res.	Assoc.	Honorary Foreign	Honorary U.S.	Hon. Assoc.	Total
December 31, 1966	1,105	161	0	2	4	2	1,274
Died during year	20	6					26
Resigned	12	2					14
Elected	49				1	2	52
Transferred from Resident to Non-Resident	−5	+5					
Transferred from Non-Resident to Resident	+3	−3					
Failed to Qualify	0						
Forfeited	6						6
December 31, 1967	1,114	155	0	2	5	4	1,280
Life Membership							
New Type							
Under 70	19	5					
Over 70	23	6					
Old Type (Commutation Dues)	6	0					
	48	11					
Dues Remitted							
Before 1967	39	10					
During 1967	4	3					
	43	13					
Annual Contributors as of December 31, 1967	1,023	131					

GEORGE A. HAHN, M.D.
Secretary

Report of the Treasurer for the Year Ended June 30, 1967

ASSETS

General Fund:		
Cash in bank and on hand	$ 94,408.12	
Accrued income receivable	8,444.89	
		$ 102,853.01
Restricted Trust Funds:		
Cash in bank	31,083.99	
Accrued income receivable	1,357.64	
		32,441.63
Maintenance and Reserve Fund:		
Cash in bank	338.78	
Investments	17,983.50	
		18,322.28
Joseph N. Pew, Jr., Memorial Loan Fund:		
Investments	49,187.59	
Notes receivable	22,350.00	
		71,537.59
Employee's Pension Plan:		
Investment with Insurance Company of North America		41,281.03
Trust Funds:		
Uninvested principal cash	42,369.16	
Uninvested income cash (restricted)	32,441.63	
Mortgage	25,875.00	
Real estate	158,905.33	
Bonds	535,531.67	
Preferred stocks	67,421.29	
Common stocks	1,088,950.21	
		1,951,494.29
Plant Fund:		
Land—16-25 South 22nd Street	95,000.00	
Building	1,420,747.93	
Furniture and fixtures	1.00	
Deposits on perpetual fire insurance policies	11,462.28	
		1,527,211.21
		$3,745,141.04

FUNDS

General Fund:		
Library:		
General account	$ 17,766.31	
Medical documentation service	15,937.24	
Book funds	1,864.42	
Special accounts	46,408.80	
		$ 81,976.77
Greater Philadelphia Committee for Medical-Pharmaceutical Science		7,757.14
Development Fund		14,246.41
Unexpended operating fund balances:		
Current operations—overexpended	(3,790.52)	
President's room	525.00	

Entertainment Committee		32.45	
Friends of the Library		1,265.00	
Reception—Art Museum		569.37	
Section on General Medicine		271.39	
Total operating funds—overexpended—exhibit B			(1,127.31)
Total general fund			102,853.01
Restricted Trust Funds—unexpended income			32,441.63
Maintenance and Reserve Fund—principal			18,322.28
Joseph N. Pew, Jr., Memorial Loan Fund—principal			71,537.59
Employees' Pension Plan—principal			41,281.03
Trust Funds:			
Principal net worth:			
Discretionary Common Trust Fund	$1,695,871.13		
Legal common trust fund	23,572.94		
Trust funds not pooled	14,828.26		
Fund for purchase of units in discretionary common trust fund	25,875.00		
Real estate fund	158,905.33	1,919,052.66	
Income net worth:			
Discretionary common trust fund	27,588.17		
Legal common trust fund	1,193.26		
Trust fund not pooled	3,660.20	32,441.63	1,951,494.29
Plant Fund—principal			1,527,211.21
			$3,745,141.04

NOTES: The various fund investments are shown at their recorded values, which values substantially represent cost.

GENERAL FUND

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS

Year Ended June 30, 1967

Receipts:			
Income on investments, net of agents fees:			
Trust funds	$105,563.30		
Less: Amount transferred to income of the several restricted trust funds	16,367.29	$89,196.01	
Erlanger Garage			
Income	11,400.00		
Expenses	5,555.15	5,844.85	
Income from funds, principal of which is not administered by College	2,771.90		
Less, amount transferred to income of a restricted fund	483.86	2,288.04	
Interest on mortgage	1,227.64		
Income from other sources	2,301.72	3,529.36	$100,858.26
Contributions:			
Fellows dues		87,983.29	
Use of hall and projector		3,121.00	
Development Fund		19,108.22	
For Greater Philadelphia Committee for Medical-Pharmaceutical Science		17,000.00	127,212.51
Transfers from other funds:			
For reducing deficit in current operating Miscellaneous Contributions Fund		1,734.00	
For covering deficit of Entertainment Committee:			
S. Weir Mitchell Entertainment Fund		715.20	
Richard D. Harte Entertainment Fund		339.42	2,788.62

Library:			
Contribution plan	27,924.60		
Photostats, fines, etc.	53,621.77		
Sundry receipts	49.00	81,595.37	
Medical documentation service		59,472.29	
Special account—influenza grant		33,205.00	
Special account—resources grant		26,875.00	201,147.66
Miscellaneous			3,044.00
Total receipts			435,051.05
Disbursements:			
Operating expenses:			
Hall Committee		$41,070.26	
Office of the Secretary-Treasurer		22,415.88	
Old Age Benefit taxes		6,817.29	
Pensions		203.30	
Publication Committee		7,578.68	
Entertainment Committee		3,442.67	
College Collections Committee		5,335.00	
Premium to Pension Fund		6,540.00	
Library General:			
Salaries	$118,160.26		
Books, journals, supplies, etc.	62,705.59		
Book Fund	3,395.56	184,261.41	
Medical documentation:			
Salaries	32,750.45		
Other expenses	10,784.60	43,535.05	
Library Special accounts:			
Journal acquisition fund	2,596.30		
Influenza grant	22,948.86		
Resources grant	5,482.05	31,027.21	
Greater Philadelphia Committee for Medical-Pharmaceutical Science		15,856.07	
Development Fund		4,861.81	
Rare books		100.00	
		373,044.63	
Balance in Committee on Interns & Residents account transferred to Joseph N. Pew, Jr., Memorial Loan Fund		717.89	
Balance in Reserve for contingencies account transferred to General Endowment Fund		190.02	
Balance in Life Membership account transferred to Life Membership Fund in Discretionary Common Trust Fund		680.00	$374,632.54
Excess of receipts over disbursements			60,418.51
Cash balance, June 30, 1966			42,434.50
Balance, June 30, 1967:			
Cash in bank and on hand		94,408.12	
Accrued income receivable		8,444.89	
			$102,853.01

Statement of Cost of Investment Units Purchased in the Various Trust Funds by the Restricted Endowment Funds

July 2, 1966 to July 1, 1967

Discretionary Common Trust Fund:		
Balance, July 2, 1966		$736,621.96
Receipts:		
S. Weir Mitchell Associates journal fund	$12,739.97	
George W. Norris Fund	10,000.00	

Robert Abbe Fund	4,659.08	
Life Membership Fund	1,958.52	
Library General Endowment Fund	55,100.00	
Transfers from unit adjustment account:		
George W. Norris Fund	21.15	
Life Membership Fund	21.15	
	84,499.87	
Less, amount insufficient to purchase one unit, credited to unit adjustment account	48.28	
		84,451.59
Balance, July 1, 1967		821,073.55
Legal Common Trust Fund		
Balance, July 1, 1966 (no change during year)		23,500.00
Trust Funds Not Pooled		
Balance, July 1, 1966 (no change during year)		14,974.56
Total restricted endowment funds, July 1, 1967		$859,548.11

STATEMENT OF COST OF INVESTMENT UNITS PURCHASED IN THE DISCRETIONARY COMMON TRUST FUND BY THE GENERAL ENDOWMENT FUND

July 2, 1966 to July 1, 1967

Balance, July 2, 1966		$ 391,120.76
Receipts:		
Entrance contributions	$2,400.00	
Voluntary contributions from Fellows, etc.	673.00	
Book of Remembrance	125.00	
Amortization of mortgage—13th and Locust Streets	2,250.00	
Estate of Georeg W. Outerbridge	5,000.00	
Estate of William Zentmayer	54.61	
Reserve for contingencies	190.02	
Transfer from unit adjustment account	21.15	
	10,713.78	
Less: Amount insufficient to purchase one unit, credited to unit adjustment account	11.88	10,701.90
Balance, July 1, 1967		$ 401,822.66

BY THE COLLEGE EXTENSION FUND

July 2, 1966 to July 1, 1967

Balance, July 2, 1966		4,782.56
Receipts:		
Voluntary contributions from Fellows	$ 278.00	
Income earned on invested principal	291.34	
Transfer from unit adjustment account	21.15	
	590.49	
Less: Amount insufficient to purchase one unit, credited to unit adjustment account	19.44	
		571.05
Balance, July 1, 1967		$ 5,353.61
Total of all restricted funds, July 1, 1967		$1,266,724.38

KENDALL A. ELSOM, M.D.
Treasurer

Annual Report on the Library*

Report year. As was forecast in last year's annual report, this year's account covers a fourteen month period, November 1, 1966 to December 31, 1967, thereby preparing the way for future annual reports to coincide with the calendar year which corresponds to the terms of the officers and committees of the College.

Highlights of the year must be the Regional Medical Library Conference which was held in January and the application for regional medical library status which was prepared and submitted during the summer. Regardless of the outcome of these major efforts, the College has officially and publicly confirmed its sense of mission and purpose and has declared its intent to continue and expand regional medical library functions, whether or not officially so designated.

Regional Medical Library Conference. This conference may prove in retrospect to have been one of the most significant meetings ever held at the College. It was significant because of the commitment on the part of the College which was demonstrated by its enthusiastic support by the officers of the College and perhaps even more importantly by the heartening proof of community support given by a large and enthusiastic audience. More than 200 persons stayed through an all-day Saturday session.

John Franklin Huber, M.D., a former Chairman of the Library Committee and Chairman of the Philadelphia Regional Medical Library Committee since its inception in 1964, presided at the morning session. He noted that the meeting's objective was to bring together administrators, librarians, users from the health professions, schools, hospitals, the practicing medical community, the health agencies and research institutions, for discussion and planning.

Papers presented during the morning session were: "Medical Education and Research," by Robert M. Bucher, M.D., Dean of the Temple University School of Medicine; "The Practicing Physician," by David S. Cristol, M.D., a member of the Board of Directors of the Philadelphia County Medical Society; "The Pharmaceutical Industry," by Robert L. Hayne, Head of the Documentation Section of the Science Information Department of Smith Kline and French Laboratories; "An Out-of-Town Teaching Hospital," by Michael L. Sheppeck, M.D., Medical Director and Director of Medical Education of St. Luke's Hospital in Bethlehem; "The Computer and Automation in Medical Libraries and Medical Information," by Mrs. Claire Schultz, of the Institute for the Advancement of Medical Communication.

The Chairman of the afternoon session was Francis C. Wood, M.D., President of The College of Physicians of Philadelphia and Professor of Medicine of the University of Pennsylvania. Dr. Wood introduced Louis S. Gerber, M.D., Regional Medical Library Program Director, Extramural Programs, National Library of Medicine, and Carl D. Douglass, PH.D., Chief of the Facilities and Resources Division of the National Library of Medicine, who discussed "The Regional Medical Library Program of the National Library of Medicine." Elliott H. Morse, Librarian of the College, spoke on "A Regional Medical Library Program and the Role of The College of Physicians of Philadelphia."

The Librarian's paper proposed the establishment of a Regional Medical Li-

* November 1, 1966–December 31, 1967.

brary Program predicated upon the designation of the College Library as a regional medical library under the terms of the Medical Library Assistance Act of 1965. Eleven parts of this program described are: improvement of present interlibrary loan and photocopy service, a well-developed telephone reference service, teletype connection with the National Library of Medicine, referral of unfilled interlibrary loan requests to other libraries, a MEDLARS search center, appointment of regional consultants for liaison with certain subject groups, encouragement of feed-back, recruiting and training personnel, collection and lending of audiovisual materials, study of automation, and provision for a community voice in the planning and administration of the program. Copies of the Proceedings of the Conference are available from the Regional Medical Library Committee for $3.00.

Officers visit to National Library of Medicine. The seriousness of the College's intentions were emphasized in March when Drs. Francis C. Wood, Donald M. Pillsbury, John H. Gibbon, Jr., and John K. Clark visited the National Library of Medicine. The advantages of a planning grant proposal were discussed at that time.

Regional Medical Library Grant application. During the summer a formal application for regional medical library status and support was prepared and presented to the National Library of Medicine. In connection with this application a Regional Planning Council was established by the Philadelphia Regional Medical Library Committee to insure wider representation of community institutions than is afforded by the Committee which performs an executive committee function. The preliminary draft of the document was circularized among a group of almost 100 persons who were invited to comment. Some very thoughtful responses helped strengthen the final version.

Site visit. On September 29, a site visit was made by a team, appointed by the National Library of Medicine, composed of Louis S. Gerber, M.D., of the National Library of Medicine, Hayden C. Nicholson, M.D., Dean of the University of Miami School of Medicine, and Vern Pings, PH.D., Librarian of the Wayne University School of Medicine. Local friends of the College Library who made themselves available to the site visit team during an all-day session were: Francis C. Wood, M.D., President of the College; Richard A. Kern, M.D., Honorary Librarian of the College; Samuel X Radbill, M.D., Chairman of the Library Committee; John F. Huber, M.D., Chairman of the Regional Medical Library Committee; Glen R. Leymaster, M.D., representing the Philadelphia Medical School Deans' Committee and the Greater Delaware Valley Regional Medical Program; Richard H. Orr, M.D., Director of the Institute for the Advancement of Medical Communication; Mr. Robert Lentz, Librarian of the Jefferson Medical College; John K. Clark, M.D., Special Assistant to the President of the College; Mrs. Beatrice F. Davis, Assistant to the Librarian of the College, and Elliott H. Morse, Librarian of the College.

Pennsylvania State Medical Society endorsement. The College was particularly gratified when the Pennsylvania State Medical Society endorsed the College Library's application for recognition as a regional medical library for the Commonwealth of Pennsylvania. By happy coincidence this endorsement was given on September 29 while the National Library of Medicine site visit team was at the College and the news was received at an opportune moment. The Library Committee subsequently indicated its appreciation to Dr. Samuel X Radbill, who formulated the resolution and who spoke for it at the right time.

Budget review. In December, Dr. Francis

C. Wood, Dr. John H. Gibbon, immediate past President of the College, Mrs. Davis and Mr. Morse went to Bethesda to review the proposed regional medical library budget with officers of the National Library of Medicine. At year's end the funding of this application was still in doubt.

The Philadelphia Regional Medical Library Committee continued to meet frequently during the year. The Committee studied and approved a statement of intent which the College Library submitted to the National Library of Medicine soon after the January Conference. This statement proposed a survey and planning study of medical library resources and services. The favorable reception of this letter of intent encouraged the College to add operational features and prepare a full-dress regional medical library application.

During the year, the following additions were made to the Committee by the President of the College, in order to provide broader subject and geographical representation: Mr. Richard L. Snyder, Director of Libraries, Drexel Institute of Technology; Mr. Fred Bryant, Librarian, Hershey Medical Center, Miss Catherine Brosky, Librarian, Graduate School of Public Health, University of Pittsburgh, as liaison with the Regional Medical Program of Western Pennsylvania; Dr. Eugene Syrovatka, Librarian, Delaware Academy of Medicine; Dean W. Roberts, M.D., Chief, RMP Activities, Hahnemann Medical College, and staff liaison between the RMP Coordinating Committee and the Committee on Continuing Education of the Greater Delware Valley Regional Medical Program, and Sherman Garrison, M.D., Chairman, Committee on Medical Education, Medical Society of New Jersey. Richard H. Orr, M.D., Director of the Institute for the Advancement of Medical Information and John K. Clark, M.D., Special Assistant to the President of the College, have been attending meetings of the Committee by invitation.

At the end of the year, the Committee was attempting to find a new title which would be most specifically descriptive of the geographical region covered.

Administrative relationships. Discussions in the College Library Committee and Regional Medical Library Committee meetings during the year clarified certain areas of responsibility of these committees. It was recognized that the Regional Medical Library Committee is not solely interested in the function of The College of Physicians as a regional library but has a responsibility to study and encourage library development and interlibrary relationships throughout the region. In the broadest sense this involves the dissemination of medical information to all life science personnel in the region regardless of institutional affiliation. The operation of the College library itself is charged to the library committee of the College under the by-laws of the College and this, of course includes the Regional Services Division of the College Library if official regional medical library designation is achieved.

Liaison between the two committees is assured by the representation of the college on the Regional Committe by the Chairman of the Library Committee of the College, the Librarian of the College and the Head of the Regional Services Program of the College Library. The Regional Medical Library Committee is likewise given a voice in the policy formulation and administration of the Regional Services Program of the College Library.

Regional Planning Council. In order to achieve a broader representation and greater sense of involvement than could be achieved by the Regional Medical Library committee, the Chairman of the Regional Medical Library Committee, with the approval of the President of the College, invited the following persons to serve on a Regional Planning Council:

INSTITUTIONAL REPRESENTATIVES

Academy of Natural Sciences of Philadelphia. Miss Ruth E. Brown, Librarian
Adams County Medical Society. Harold Closson, M.D.
American College of Physicians. Edward C. Rosenow, Jr., M.D., Executive Director
American Philosophical Society. Whitfield J. Bell, Ph.D., Librarian
Biosciences Information Service, Mrs. Phyllis V. Parkins, Director
Bucks County Medical Society. Mr. Ralph M. Rolan II, Executive Secretary.
Camden County Medical Society. Robert L. Breckenridge, M.D.
Chester County Medical Society. Dorthy I. Lansing, M.D.
The College of Physicians of Philadelphia. Francis C. Wood, M.D., President
Delaware Academy of Medicine. Eugene Syrovatka, LL.D., Librarian
Delaware County Medical Society. Mr. John Kotik, Executive Secretary
Franklin Institute. Mr. Emerson Hilker, Librarian
Free Library of Philadelphia. Mr. Emerson Greenaway, Director
Greater Delaware Valley Regional Medical Program. Dean W. Roberts, M.D., Chief R.M.P. Activities Hahnemann Medical College and Staff Liaison between R.M.P. Coordinaing Committee and the Committee on Continuing Education.
Greater Delaware Valley Regional Medical Program. William C. Spring, Jr., M.D., Coordinator
Hahnemann Medical College. Joseph R. DiPalma, M.D., Acting Dean
Institute for Advancement of Medical Communication. Richard H. Orr, M.D., Director
Institute of the Philadelphia Association for Psychoanalysis. Harold Kolansky, M.D., Chairman, Administrative Board.
Institute of Scientific Information. Eugene Garfield, Ph.D., Director
Jefferson Medical College. William A. Kellow, M.D., Dean
Lea Associates, Inc. Adrian Buyse, Ph.D., Associate Director, Pharmaceutical Education Division.
Luzerne County Medical Society. Mrs. Leona H. Franey, Assistant Librarian.
Medical Literature, Inc. Mr. S. Sim Kessler, Director.
Medical Society of Delaware. H. Thomas McGuire, M.D., President
Medical Society of New Jersey. Sherman Garrison, M.D., Chairman, Committee on Medical Education.
Mental Health Association of Southeastern Pennsylvania. Mr. David B. Bernhardt, Director.
Montgomery County Medical Society. Mr. Ralph M. Rolan, II, Executive Secretary.
Obstetrical Society of Philadelphia. John D. Corbit, Jr., M.D., President
Pennsylvania Medical Society. James R. Johnston, M.D., Member, Committee on Archives.
Pennsylvania Society of Internal Medicine. Alexander M. Minno, M.D., President.
Pennsylvania State Library. Mr. Ernest Doerschuk, Jr., State Librarian
Pennsylvania State University. Milton S. Hershey Medical Center. Mr. Fred D. Bryant, Librarian.
Philadelphia Academy of Surgery. Thomas F. Nealon, Jr., M.D., Secretary.
Philadelphia College of Osteopathic Medicine. Sherwood R. Mercer, LL.D., Vice-President and Dean.
Philadelphia College of Pharmacy and Science. Linwood F. Tice, D.Sc., Dean.
Philadelphia County Dental Society. Dale F. Roeck, D.D.S., President.
Philadelphia Department of Public Health. Lewis D. Polk, M.D., Deputy Health Commissioner.
Philadelphia Laryngological Society. Charles M. Norris, M.D., President.
Philadelphia Pediatric Society. Charles Glasson, M.D., President.
Regional Medical Program of Western Pennsylvania. Miss Catherine M. Brosky.
State of New Jersey Department of Health. Mr. Ralph T. Fisher, Director of Special Consultation Services.
Temple University, Health Sciences Center, Michael B. Shimkin, M.D., Assistant Vice-President for Research.
Temple University School of Medicine. Robert M. Bucher, M.D., Dean
Temple University School of Pharmacy. Mr. Fred B. Gable, Assistant to the Dean.
Union Library Catalogue of Pennsylvania. Miss Eleanor Este Campion, Director
University of Pennsylvania, Division of Graduate Medicine. Paul Nemir, Jr., M.D., Director.
University of Pennsylvania, School of Dental Medicine. Lester W. Burket, D.D.A., M.D., Dean.
University of Pennsylvania, School of Medicine. Samuel Gurin, Ph.D., Dean.
University of Pennsylvania, School of Nursing. Miss Dorothy A. Mereness, Dean.
University of Pennsylvania, School of Veterinary Medicine. Donald G. Lee, V.M.D., Associate Dean.
University of Pennsylvania. Luther L. Terry, M.D., Vice-President for Medical Affairs.
University of Pittsburgh School of Medicine. Francis S. Cheever, M.D., Dean and Program Coordinator, Regional Medical Program of Western Pennsylvania.
Woman's Medical College of Pennsylvania. Glen R. Leymaster, M.D., Dean.

Resource Grant Utilization. In February 1967, the College was notified that it had been awarded $26,875.00 by the National Library of Medicine as a medical library resource grant. The College had originally requested this grant to provide free photocopy in lieu of interlibrary loan to medical school and hospital libraries, to establish a teletype connection with the National Library of Medicine and the Union Catalogue of Pennsylvania to locate and secure volumes not available at the College, and to augment the Library's acquisition of books and journals.

Regulations governing the provision of this service were formulated and approved by the Library Committee of the College and by the Regional Medical Library Committee. Requesting libraries are asked to submit all requests in writing on standard A.L.A. forms, giving complete citations, source of reference, and identification of person for whom the request is being made. Libraries availing themselves of this service are asked to supply the College Library with a list of their currently received journals and to agree to accept referrals of requests from the College Library which the College Library has been unable to fill. It is expected that libraries will not request copies from journals that are in their own collections.

By the end of December 1967, 10,222 articles had been copied with Resource Grant funds. During the same period, 47 requests which the College could not supply, were sent to the National Library of Medicine by teletype. By signing the teletype message with the name of the requesting library, it was possible to have this material mailed directly to the originating library. Incomplete citations which were not easily verifiable were returned unfilled to the requesting library.

In September, the College received a supplementary resource grant of $6,960.00. The Regional Medical Library Committee encouraged the College Library to use this to partially defray the cost of adding an Assistant to the Librarian to the staff.

Reservoir function test. In October the College Library served as an institutional guinea pig when the Institute for the Advancement of Medical Communication reviewed all of the requests received for one month. The time of receipt of all requests from other institutions for loans and photocopies was recorded. Records were kept of the time required to locate the material requested and the elapsed time until it was ready for pick-up or was placed in the mail. Records were also maintained of the number of requests which were not filled. The test included all interlibrary loans, photocopies supplied through the regular photoduplication department and those provided by the Resource Grant Program. Despite an unusually temperamental photoduplication machine in the Resource Grant Program and a high absentee rate, the College filled requests in an average of 55.8 hours (total elapsed time, not working time). We believe that this time would have been better under more normal conditions.

The number of completed transactions resulting from requests received during October was 2,726. This was 88 percent of all requests received. One half of all completed requests were processed in 46.8 total elapsed hours and 80 percent of all completed requests were processed in 98.5 total elapsed hours.

One of the surprises of the test was the unexpectedly large number of transactions involved which placed the College Library near the top of reservoir libraries so tested.

Document delivery tests. An earlier document delivery test conducted by the Institute for the Advancement of Medical Communication showed the following results in a sample of 312 references:

81.4 percent were on the shelf
12.8 percent were not in the College Library
1.0 percent was out on interlibrary loan
1.0 percent was awaiting shelving
2.0 percent were not located or accounted for

A later test, considered to be much more stringent, consisted of titles which had not been found in an academic library and which might be sought in a reservoir library. The results of this test were:

174 or 71 percent were available in a few hours
176 or 72 percent were available within a day
182 or 75 percent were available in several weeks
185 or 76 percent were owned by the College Library

A check of the Union Library Catalogue and other sources located all but 4.1 percent of the test sample in nearby libraries.

Library cost accounting. Through the courtesy of Smith Kline and French Laboratories, a cost study of circulating items from the library was undertaken. The cost study was based on circulation or "items consulted" as being the most reliable statistical base. General College operating expenses were allocated to library costs to determine overhead as follows: building maintenance costs on proportion of floor space occupied by the Library; secretarial and management costs on the basis of the percentage of total College disbursements made on behalf of the Library; social security costs by function of staff members; pension costs on the basis of ratio of eligible personnel by function. The study calculated the cost of circulating one item to be $3.16 based on 70,739 items and a total cost of $223,374.

It has been noted that the study did not consider such items as depreciation on the original costs of the collection and building. The accountant's rationale for not including such costs in his calculations is, "In non-profit institutions, the necessity of providing for depreciation of buildings and equipment out of income does not exist since these institutions are not conducted for profit. Their buildings and equipment nearly always are provided through special appropriations or gifts and generally will be replaced in a similar manner."

From an administrative standpoint it must also be admitted that some circulations cost more than others and that discovering that a requested item is not in the library may cost as much as lending an item found. Crude though this yardstick may be, we lack a better measure at the moment and can only conclude that operating a research library is not an inexpensive undertaking.

Library stack requirements. Concern over diminishing expansion space in the stacks continued to trouble the Library Committee. An interesting comment may be found in the Building Committee minutes of October 13, 1949, "Mr. Morse pointed out that the estimate that the originally proposed stack space will be adequate for 25 years failed, he believes, to allow for the present overcrowding of the existing stacks. Taking this crowding into account, he suggests that 15 years is a more reliable estimate." Eighteen years have now passed and the lack of open space in the stacks suggests the validity of the 1949 prediction. In 1954, in a more optimistic mood, the Librarian hoped that 20 years growth might be provided. However, in 1955, the architect insisted on three foot aisles between ranges, reducing book capacity by three years growth. An examination in 1967 suggests that unless plans are made, money is raised and a building is ready for occupancy by 1971, effective stack housekeeping will no longer be possible.

Alternatives being considered are the following: adding two more floors to the stack unit built in 1955, extending the rear building line back to Van Pelt Street and extending the old stack back to Van Pelt Street.

Office and work room space. In addition to book space needs noted above, the prospect of becoming a regional medical library raises the problem of people space. It is presently estimated that regional operation will require the addition of 18 to 20 persons to the Library staff in the next few years. As this report year draws to a close, a newly appointed building and plan-

ning committee is energetically seeking a solution to this imminent crisis.

S. Weir Mitchell Associates. The third banquet of the S. Weir Mitchell Associates was held at the College on November 1, 1967. The Guest Speaker was Preston A. Wade, M.D., President of the New York Academy of Medicine, whose address was entitled "Finances is Fun." Under the capable Chairmanship of George I. Blumstein, M.D. the Associates have secured 156 endowments for the College Library.

Osler Library. The Chairman of the Library Committee attended a meeting of the Curators of the Osler Library at McGill University. He is, *ex-officio,* a member of the Curators in accordance with Sir William Osler's desire. Other Curators represent the National Library of Medicine, the Welch Medical Library and the School of Medicine Library of Yale University.

Personnel. One of the most constructive moves made in recent years was the creation of the new position of Assistant to the Librarian. This addition to the staff was made possible by the Library's Resource Grant supplement. The prospects for the success of this expansion were materially enhanced when the Library was able to recruit Mrs. Beatrice Farr Davis to assume the duties of this position. Mrs. Davis is a graduate of Wheaton College and earned her M.S. in L.S. degree from Drexel Institute of Technology. She earned a certificate from La Sorbonne. Her most recent position was Director of Students and Instruction in the Graduate School of Library Science at Drexel. Previous Drexel assignments were Administrative Assistant and Chief of Administrative Services.

Mrs. Joyce S. Mingledorff resigned from her position as Head of the Reference/Circulation Department on June 30, 1967. She had served effectively in this position since January 1966. This vacancy was filled in August with the appointment of Miss Alberta Berton as Head of the Reference/Circulation Department and Administrative Director of the Medical Documentation Service. Miss Berton's previous experience as Research Librarian of William H. Rorer, Inc., and the National Drug Company well qualified her for this responsibility.

Walter Bethel, PH.D., resigned as Director of the Medical Documentation Service in June 1967. He had served the College Library with distinction as Director since 1960 and as a bibliographical assistant since 1958. Eleanor W. Ashkenaz, PH.D., formerly Associate Professor of Biology at West Chester College, accepted the Scientific Directorship of the Service in September 1967. She had previously worked during two summers on temporary assignments with the Service. Dr. Ashkenaz received her doctorate from the University of Pennsylvania in Zoology and Physiology. Her professional career includes appointments at the University of Pennsylvania, Allied Chemical Corporation, Rohm & Haas Company and Medical Literature, Inc.

The Reference/Circulation Department had undergone a complete change of personnel during the year. In addition to Mrs. Mingledorff's resignation noted above, Miss Janice K. Hill left librarianship for matrimony and Mrs. Julia O'Malley resigned to devote her efforts to home making. Mrs. Patricia Walsh who divided her time between this department and the Serials Department also switched her career to motherhood. Mrs. Eileen S. Binckley joined the staff as a Readers' Service Assistant in June 1967. She graduated from Ursinus College. In August Miss Juneann M. Kasperowicz was promoted from the Paging staff to a newly created Junior Assistantship and was assigned to the Reference/Circulation Department. Miss Kasperowicz originally joined the library staff in 1965. Mrs. Eleanor G. Taylor joined the staff in November on a part-time basis serving in the Reference/Circulation Department and the Medical Documenta-

tion Service. Mrs. Taylor is a graduate of the University of Delaware. Miss Frances O'Byrne also was employed in this department for a short time.

The Serials Department was also affected by Mrs. Walsh's resignation noted above. Miss Matilde M. Zalinski joined the College Library staff in November, dividing her time, as Mrs. Walsh had done, between the Serials and Reference/Circulation Departments. Miss Zalinski graduated from the University of Missouri. Miss Virginia Ann Thomas was employed in September to fill the part-time position of evening and Saturday relief left vacant by the resignation of Mrs. Barbara Piper.

Junior Assistantships. In addition to the promotion noted above, three other members of the Paging Staff were advanced to junior assistantships during the year. They were Miss Andrea L. Jancsura, Photoduplication Assistant, Miss Josefa Sereda, Acquisitions and Resource Grant Assistant, and Mrs. Margaret G. Henry, Processing Assistant. Newcomers to the Paging Staff this year are Miss LaVerne Jackson, Mr. Samuel De Phillippo, Miss Marlyn C. Merritt. Miss Barbara Sterrett resigned to enter nursing school, and Mr. Steve Peitzman entered the Temple University School of Medicine.

Resource Grant Program. The photoduplication and teletype aspects of this Program were supervised by Miss Barbara Maurer under the general direction of the head of the Reference/Circulation Department. Other members of the staff were Miss Ellen Cantor, Miss Linda Howell, Mrs. Mariá Nix, Miss Nancy Jessen, and Mr. Augustus Young. Mr. Richard Coppolla helped in this Program during the Summer.

Professional Staff Acitivity. The Library was represented at the 66th Annual Meeting of the Medical Library Association in Miami by Mrs. Lisabeth M. Holloway, Miss Marybeth Honeyman, Miss Muriel Zeldis and Mr. Elliott H. Morse. Mr. Morse also serves on the MLA/NLM Liaison Committee. The Librarian participated in a Seminar at the Woman's Medical College of Pennsylvania, discussing "The Student's Approach to the Medical Literature." Miss E. Naomi Frazer served on the Program Committees of both the Philadelphia Regional Group of the Medical Library Association and the Special Libraries Council of Philadelphia and Vicinity and is Vice Chairman of the Social Science Group of the Council. Mrs. Davis serves on the Executive Committee of the Drexel Library School Alumni Association. She is a member of the Library Bindery Institute Scholarship Committee. Miss Marybeth Honeyman and Mrs. Eileen Binckley serve on the Courtesy Committee of the College Staff.

Professional activities of members of the Historical Department and the Medical Documentation Service are noted in those sections of this report.

Special acknowledgement is made to Miss Marie de Benneville who persevered with the typing of the Regional Medical Library Grant application and to John K. Clark, M.D., who, while serving as Special Assistant to the President, demonstrated a particular sensitivity for the administrative ramifications of the College Library and whose support at the right times made the Librarian's lot an easier one.

Benefactors. The Library acknowledges its gratitude to the following institutions which have shared the operational costs of the College Library:

NON-PROFIT INSTITUTIONS

Academy of Medicine of New Jersey
Antioch College-Fels Research Institute
Bryn Mawr Hospital Medical Staff
Bucknell University
Burlington County Hospital Medical Staff
Chestnut Hill Hospital Medical Staff
Children's Hospital of Philadelphia
Delaware Academy of Medicine
Episcopal Hospital
Fitzgerald-Mercy Hospital
Germantown Dispensary & Hospital

Hahnemann Medical College
Harrisburg Hospital
Hospital of the University of Pennsylvania
Institute for Cancer Research
Institute for Medical Research, Camden
Jeanes Hospital Medical Staff
Jefferson Medical College and Hospital
Lankenau Hospital
Medical Literature, Inc.
Misericordia Hospital Medical Staff
New Jersey College of Medicine & Dentistry
Pennsylvania College of Podiatric Medicine
Pennsylvania Hospital Professional Staff
Philadelphia College of Osteopathic Medicine
Philadelphia General Hospital
St. Agnes Hospital Medical Staff
St. Francis Hospital
St. Luke's Hospital, Bethlehem
Temple University School of Medicine
U.S. Naval Hospital Staff
University of Penna. Graduate School of Medicine
University of Penna. School of Medicine
Veterans Administration Hospital, Philadelphia
Walson Army Hospital Librarian
Warren State Hospital
Wills Eye Hospital
Woman's Medical College of Pennsylvania

CORPORATE INSTITUTIONS

Air-Shields, Inc.
American Cyanamid Company (Lederle Labs.)
American Electronic Laboratories, Inc.
Astra Pharmaceutical Products, Inc.
Atlantic Richfield Company
Atlas Chemical Industries, Inc.
James E. Beasley, Atty.
Bellis, Kolsby & Wolf, Attys.
Bernstein, Bernstein, Harrison & Kessler, Attys.
Borden Chemical Company
Campbell Soup Company
Cohen & Verlin, Attys.
Council for Tobacco Research
Dechert, Price & Rhoads, Attys.
Dilworth, Paxson, Kalish, Kohn & Levy, Attys.
Duane, Morris & Heckscher, Attys.
E. I. du Pont de Nemours, Haskell Laboratory
E. I. du Pont de Nemours, Lavoisier Laboratory
E. I. du Pont de Nemours, Stine Laboratory
FMC Corporation (American Viscose Co.)
Frank C. Farnham Company
Freedman, Borowsky & Lorry, Attys.
General Electric Co., Missile & Space Division
General Technical Services, Inc.
Evelyn M. Goldstein
Institute for Scientific Information
International Information Institute, Inc.
International Pharmaceutical Corporation
Johnson & Johnson Research Center
Kisselman, Devine, Deighan & Montano, Attys.
Klinger, Heller & Simone, Attys.
Krusen, Evans & Byrne, Attys.
LaBrum and Doak, Attys.
LaWall and Harrisson Research Laboratories
Lea Associates, Inc.
Lewis & Gilman, Inc.
James J. McEldrew, Attys.
McNeil Laboratories, Inc.
Manchel, Lundy & Lessin, Attys.
Mead Johnson & Company
Merck Frosst Laboratories, Montreal
Merck Sharp & Dohme, Rahway
Merck Sharp & Dohme, West Point
Morgan, Lewis & Bockius, Attys.
National Drug Company
Milton A. Nemeroff, Atty.
Norwich-Eaton Charitable Trust
Ortho Research Foundation
Pennsalt Chemicals Corporation
Pennsylvania Railroad Medical Dept.
Pepper, Hamilton & Scheetz, Attys.
Personal Products Company
Chas. Pfizer & Co., Inc.
Quaker Chemical Corporation
Ramsdell, Buckley & Co., Inc.
Richter, Lord & Cavanaugh, Attys.
Rittenhouse Book Store
Rohm and Haas Company
William H. Rorer, Inc.
Samson Laboratories
Schnader, Harrison, Segal & Lewis, Attys.
Morris M. Shuster, Atty.
Smith Kline & French Laboratories
E. R. Squibb & Sons
Paula Stone
Arthur H. Thomas Company
Wallace Laboratories
Mendel W. White, Atty.
J. B. Williams Company, Inc.
Worthington Biochemical Corporation
Wyeth Laboratories

ELLIOTT H. MORSE
Librarian

HISTORICAL

1. Report of the Associate Curator and Cataloguer of Historical Materials

	1967	*11/1–12/31, 1966*
Items Catalogued		
Books added to the collection, including early works and current works on the history of medicine	517	33
Pamphlets	437	128

Pictures, documents, and manuscripts	383	117
Books recatalogued (because of defective and deteriorating cards, erroneous entries, or misleading location symbols)	319	52
	1,604	330
Cards Prepared	11,491	2,100

Special Activities

Housekeeping. The activities described in the 1966 report, as to dressing leather bindings and making acid-free paper slipcases for small and medium-sized books in poor condition, have been continued. We have inventoried the contents of the Gross Library. We have inventoried and retagged the Lewis Curios, a collection of 376 rare and unusual books, generally in good physical condition, which is classified and shelved as a unit in the Cage. (Among its more important possessions may be numbered the famous "thick-paper" Harvey and three incunabula.) New pamphlet boxes, each holding 100–110 items (in envelopes), have been acquired for both Cage and stack pamphlets.

Special cataloguing projects. (1) *Galen.* This library's extensive holdings of early Latin and vernacular translations of Galen have evidently received the attention they deserve, inasmuch as the catalogue cards pertaining to them have been handled so much that they are unusually cracked and brittle. For this reason, and others, the Historical Cataloguer has undertaken the recataloguing of the entire Galen collection, according to standardized Latin titles. In this project, the learned assistance of the Curator has been invaluable. (2) *Scrapbooks.* We continue to work on the Carson scrapbooks and on others which come to light from time to time, analyzing each letter, clipping, portrait, and so on. This is, like the Galen project, a time-consuming task, but very much worthwhile, inasmuch as these scrapbooks contain many original documents of interest to historians. (3) *Addenda to the Sturgis Collection.* Dr. Sturgis kindly sent us three boxes of addenda to the 100-plus portfolios of engravings, cabinet photographs, and clippings which he compiled in the 1940's from our holdings and from personal and institutional gifts which he obtained. These are also being catalogued.

Gifts. During the summer of 1967, five substantial collections of historical items came into our hands, four by gift, and one by purchase. The two largest gifts, totalling several hundred volumes, came from Lancaster, Pennsylvania: one from Franklin and Marshall College, which very kindly presented us with many valuable works no longer applicable to its curriculum; the other from Dr. H. C. Kinzer, through the good offices of the Lancaster Public Library. A third collection, of about thirty 18th–19th century works, was the gift of a Fellow of this College, and included several highly interesting items which we added to our holdings. Twenty-five items from this collection proved to be duplicates; at the donor's special request, they are to be offered for sale to libraries only. The fourth collection, of about forty-five 19th-century American imprints, was the gift of Dr. Woodruff, and, again, filled some gaps for the College collections, and also contributed to our sale-lists. The fifth collection, which was purchased from a descendant of the original collector, consists mostly of historical works, both primary and secondary, on smallpox and vaccination. It has added very substantially to our considerable holdings in this area, and the duplicates will be presented as a unit on a future sale-list and should be highly salable. All of these collections were checked item by item prior to their arrival, and provided a rather intensive summer's work for our staff.

Sale of historical duplicates. Three lists were circulated during this period, which met with a gratifying degree of acceptance,

especially from librarians, as well as the Fellows of the College.

Personnel. The Associate Curator was privileged to attend the meetings of the American Association for the History of Medicine, April 26–29, 1967, at Yale; and the Medical Library Association, June 12 to 16, at Miami. It may be appropriate to note here an extra-curricular professional activity of the Associate Curator, that is, the editing by her of the 12th edition of the *Directory of Libraries and Information Sources in the Philadelphia Area,* a publication of the Special Libraries Council of Philadelphia and Vicinity, to appear in the spring of 1968. At the end of May, Mrs. Betty Voigt, our part-time typist, left, as expected, at the completion of her husband's schooling. Mrs. Harriet Forbes accepted this position, which was reclassified to full-time, and entitled Historical Assistant, but was obliged to leave unexpectedly at the end of August, because of her husband's transfer to another area. In September, Mrs. Janet Hennegan, who has a master's degree in history, and considerable fluency in German, came to us as Historical Assistant, and is giving valuable assistance with a number of research projects. Our part-time page, Miss Halina Wierzbiecki, continues to assist capably in shelving, searching, and book preservation.

L. M. Holloway
Associate Curator and
Cataloguer of Historical Materials

2. Report of the Curator

The senior Curator believes that the Associate Curator's section of their report amply substantiates his and others' conviction, acquired from day-by-day observation, that never before in the long history of the College have its library's historical collections been serviced so astutely and comprehensively as they have been since the advent of Mrs. Lisabeth M. Holloway. It seems accurate, in short, to characterize her varied activities by applying to them a vivid adjective such as "phenomenal." And it seems fitting at this time, also, to pay an historically-oriented tribute to her capable and industrious assistant, Mrs. Janet G. Hennegan.

A few of the more interesting *Historical Acquisitions* may be recorded as follows:

1) [*Bellows,* Horace Martin, 1839?–1912.] U.S. Army. Broad Street Hospital, Cherry Street Branch, Philadelphia, 1862–1863. Ward C medical case-book, kept by H. M. Bellows, Actg. Assist. Surgeon, U.S.A., from August 1st, 1863 until —— [blank. Philadelphia]. [73] p. holograph. (Dr. Bellows, a Pennsylvanian, received the M.D. degree from the University of Pennsylvania in 1861; unfortunately, no further information regarding him has been obtained.)

2) *Combalusier,* François de Paule (1713–1762). Pneumato-pathologie, ou Traité des maladies venteuses; traduit du Latin . . . par M. J. [A. F. Jault]. 2 vols. Paris, 1754. (Said to be a pioneer work in the understanding and treatment of flatulence. The first Professor of Medicine at the University of Valence, Combalusier later practiced with some distinction (as well as controversy) in Paris, where he became physician to the king. The library does not have a copy of the edition in Latin, which was published in 1747.)

3) *Du Verney,* Joseph Guichard (1648–1730). Traité des maladies des os. 2 vols. Paris, 1751. (Du Verney, Professor of Anatomy in Paris, is chiefly remembered, of course, as the author of the first treatise on otology (the library has a copy of the first edition, 1683); but the present work, on bone-diseases, has also been described as a remarkable one, the source of a number of ideas later presented by other writers as original.)

4) *de Janson,* Nicolas. Ostéologie, ou Suite de guidon de St Cosme, qui enseigne en peu de temps les premiers elémens de l'anatomie, en developpant sans peine ce

que les os ont de plus utile et nécessaire à leur connoissance, & pour l'intelligence des autres parties du corps humain. Paris, 1727. (Haller (Biblioth. anatomica) lists a Paris edition, 1728, but he had not seen a copy, and his is the only reference to this work that we have found. The author, himself, is similarly elusive, our copy of his work on the treatment of ruptured hernia by bandages (Paris, 1752) providing the only additional reference to him that is known to us. The seemingly extreme rarity of this latest osteological acquisition would seem to justify considerable curiosity regarding the character of the text and the nine plates.)

5) *Massey,* Samuel, ca. 1735–1793. [Two letters, Philadelphia, 12 and 15 September, 1793, to Ann Massey, Uykeland Township, Chester County. holographs.] (The letters, from a father to his daughter, are primarily concerned with the yellow fever epidemic in Philadelphia in 1793. Presented, along with typed transcriptions, by the President of the College, Francis C. Wood, M.D., the letters have been reproduced in N.s., nos. 88 and 89 (Jan./Feb., March, 1967) of our *Fugitive Leaves from the Library.*)

6) *Mitchell, Silas Weir,* 1829–1914. [Bound together, the serial installments of Mitchell's *Hugh Wynne,* illustrated by Howard Pyle, extracted from the *Century* magazine, 1896–97.] (The most valuable feature of this copy, which was presented by the President of the College, Francis C. Wood, M.D., is the following amusingly enigmatic fly-leaf inscription in Mitchell's hand: "S. Weir Mitchell for Hugh Wynne, Nov. 1898.")

7) *Manget,* Jean Jacques, 1652–1742. Bibliotheca chemica curiosa, seu rerum ad alchemiam pertinentium thesaurus instructissimus. . . . 2 vols. Geneva, 1702. (Manget was dean of the Medical Faculty at Geneva and practised medicine there with great success. "His literary work . . . consisted chiefly in collecting and reprinting in large volumes treatises on medicine and surgery, and these are valuable as works of reference to books which either are now difficult to obtain or which have disappeared." (Ferguson, *Biblioth. chemica*) The present collection consists of 140 writings by various authors on alchemical, chemical, medical, and astrological subjects. Gift of Thomas M. McMillan, M.D.)

8) *Paulus Aegineta,* 625–690. Opera. Venice, Aldus, 1553. (An exceptionally rare Aldine edition of a major medical classic; presented by Richard H. Shryock, PH.D., an Honorary Fellow of the College.)

9) *Schubarth,* Ernst, 1797–1868. Receptirkunst und Recepttaschenbuch für practische Aerzte. Berlin, 1821. (An early and scarce medico-pharmaceutical text whose 563 pages are copiously interleaved with contemporary manuscript notes.)

10) *Spielmann,* Jakob Reinbold, 1722–1783. Institutiones materiae medicae praelectionibus academicis accomodatae. Editio nova revisa. 2 vols. Strassburg, 1784. (This has been characterized as the most comprehensive textbook on the subject in its time. The copy is accompanied by considerable manuscript material related to the subject, deriving from contemporary student-owners and well-known members of the Strassburg faculty; the supplementary material has been noted in considerable detail in Mrs. Holloway's analytic cataloguing.)

11) *Valenti,* Silvio, Cardinal, fl. 1743. Editto. Rome, 1 July 1743. (Ordering complete cessation of traffic to the Papal States from Naples and providing for partial cessation of such traffic from ports on the Adriatric, because of pestilence in Messina. Ordered by Valenti, as Secretary of State, under instructions from the Pope and the Sacred College. Preceded by Editto di sanità from Ranieri, Cardinal D'Elci, at Ferrara, 9 July 1743, directing compliance with Valenti's Edict. Presented by the New

York Academy of Medicine, through its President, Preston Wade, M.D., and its Librarian, Gertrude L. Annan, at the dinner of the College's S. Weir Mitchell Associates, 1 Nov. 1967.)

Exhibits. The historical collections were drawn on, as usual, for exhibits related to the respective programs of the Section on Medical History, with the exception that the attractive and informative exhibit for the Kate Hurd Mead Lecture of the Section and the Woman's Medical College of Pennsylvania, on "The Medical Mission Sisters" was contributed by the local branch of the Medical Mission Sisters. Additional exhibits related to: 1) the centenary of Lord Lister's promulgation of the doctrine of antisepsis; for this one we were fortunate in being able to draw on materials deriving from one of his eloquent American supporters, W. W. Keen, M.D., onetime President of the College; 2) an exhibit recalling, pictorially, noted Fellows of the College who were on the fellowship roster in the Spring of 1867; 3) an exhibit commemorating the centennial of the birth of another illustrious Fellow of the College, R. Tait McKenzie (1867–1938), M.D., internationally renowned sculptor and pioneer in the field of physical education; 4) the program on Air Pollution presented by the College in conjunction with other organizations; many who examined this exhibit, in the preparation of which we were generously assisted by Elizabeth Kirk Rose, M.D., were led to express surprise that a subject so seemingly newborn could lend itself so interestingly to the historical approach; 5) an exhibit of manuscript, printed book, and pictorial memorabilia designed to further general knowledge of the varied aspects of the library's historical collections.

Fugitive Leaves. For one reason and another, it was found possible to prepare only four issues of the Historical Department's mimeographed *Fugitive Leaves from the Library* in the period under review. N.s., no. 87 (Dec., 1966), prepared by Mrs. Holloway and bearing the title, 'See Also', is an amusing compilation of cross-references uncovered in our card-catalogue by herself, Miss Muriel Zeldis, and Mr. Steven Peitzman; N.s., nos. 88 and 89 (Jan./Feb., March, 1967) reproduce the Samuel Massey letters described above under Acquisitions, #5; and N.s., no. 90 (April, 1967) reproduces a David Ramsay letter recently discovered in the historical collections.

Extra-mural. The senior Curator participated, along with the Associate Curator and the Librarian, in an evening meeting designed to further acquaint the members of the Social Sciences group of the Special Libraries Council with the history of the College and the various facets of its library's historical collections. And he served, solely, a similar function at an evening meeting of the local Philobiblon Club.

W. B. McDaniel, 2d
Curator of Library Historical Collections

Medical Documentation Service

During the report year ending October 31, 1967, the Medical Documentation Service underwent a change in administration. Alberta D. Berton became Administrative Director of the Service in August 1967 and in September 1967 Dr. Eleanor Ashkenaz joined the Staff as Scientific Director. Dr. Ashkenaz served during the summer on a part-time basis.

The new administration was fortunate to have Miss Jean Carr remain with the Service in the capacity of Executive Secretary. Mrs. Marianna Das, abstractor-translator and Robert Blackerby, abstractor/copy editor of one of our publications also remained in the Service. This competent staff was increased late in the year by the services of Miss Linda Frantz and Mrs. Cassandra Donovan, two very capable literature scientists and abstractors. Mrs. Elizabeth Wright, formerly a part-time typist,

joined the full-time staff in October, as a Datatext Operator, having successfully completed training at the IMB Data Center. Miss Bethrotha Dent continues as a part-time typist. More recently, because of increased demand for bibliographic services, Mrs. Eleanor Taylor was added to the staff.

The unpublicized existing policy of providing Fellows of the College with five hours' free searching time has been continued. Approximately 34 Fellows have utilized this service, and between 1–5 searches per Fellow were completed resulting in some 120 free hours of service.

The literature explosion requires more sophisticated methods of information storage and retrieval for effective dissemination of that information. It is hoped that with the acquisition of a Datatext System at the end of this year, the Medical Documentation Service may be able to streamline the publication of *Influenza, Birth Defects* and *Cystic Fibrosis* as well as to provide many additional services that such a system makes possible.

Two year comparative figures are given below in table form, as a means of demonstrating the consistent growth of both services and income.

TWO YEAR COMPARATIVE STATISTICS *1965–1967*

	Nov. 1, 1965–Oct. 31, 1966		*Nov. 1, 1966–Oct. 31, 1967*	
	Number	*Income*	*Number*	*Income*
Scanning References Reported	6,944	$15,709	8,746	$16,742
Average Number Subjects	29		34	
Abstracts				
English	1,220		809	
Foreign	355		395	
Totals	1,575	$20,422	1,204	$28,718
Literature Searches & Bibliographic Services	208	$ 3,728	316	$ 6,355
Translations	179	$10,136	124	$ 5,440
Editing		$ 25		$ 64
Miscellaneous		$ 12		

ALBERTA D. BERTON
ELEANOR W. ASHKENAZ, PH.D.

STATISTICAL SUMMARY

INVENTORY

	1967 (Nov. 1, 1966–Oct. 31, 1967)		*1966 (Nov. 1, 1965–Oct. 31, 1966)*	
Accessioned items:[1]				
Incunabula[2]	421		421	
Manuscripts and typescripts	1,315		1,300	
General	237,040		231,755	
Accessioned pamphlets	7,965		7,407	
		246,741[3]		240,883[3]

[1] Accessioned items in this library comprise the total number of bound volumes and such unbound pamphlets as have been cataloged as separate bibliographical units regardless of their size.

There remain many thousands of unaccessioned pamphlets awaiting accessioning and cataloging. A true quantitative and qualitative picture of the library's holdings cannot be presented until this wealth of neglected material has been processed and duly registered in our 'accessioned' count.

[2] The Library owns 423 incunabula, but there are two cases of two bound together, reducing the number of accessioned items.

[3] Included in these figures are the following col-

Unaccessioned items:[1]

Reports	28,817		28,815	
Theses	62,384		62,184	
Pamphlets and reprints	228,527		228,492	
		319,728		319,491

Accessioned acquisitions:

1967: 5,858 volumes (2,893 by purchase; 2,385 by gift; 580 by exchange). (Books: 2,278; Periodicals; 3022; Pamphlets: 558).

1966: 5,419 volumes (2,374 by purchase; 2,604 by gift; 441 by exchange). (Books: 1,750; Periodicals: 2,950; Pamphlets: 719).

Non-accessioned acquisitions:

1967: 237 items (Reports, 2; Theses, 200; Miscellaneous, 35).

1966: 345 items (Reports, 1; Theses, 313; Miscellaneous, 31).

Currently Received Serials

	Subscription	*Gift*	*Exchange*	*Totals*
U.S.A.	506	451	63	1,020
Western European Continent	720	81	124	925
Eastern European Continent	141	38	54	233
United Kingdom and Eire	149	36	26	211
Asia (Including Japan)	77	102	84	263
Latin America and West Indies	46	58	70	174
International	132	15	1	148
Canada	16	17	8	41
Pacific (including Australasia)	7	19	10	36
Africa	4	7	16	27
United Nations	10			10
Grand Total 1967 (Dec. 31)	1,808	824	456	3,088
Grand Total 1966 (Oct. 31)	1,821	842	508	3,171[4]

New Titles: A total of 120 new serial titles was added in (1 Nov. '66–31 Dec. '67).

Separate issues received, checked in the Kardex record and shelved totaled 25,033.

Readers' Use of the Library

Library hours. The Library was open, during the academic year, from 9:00 to 9:30 on Mondays and Wednesdays, from 9:00 to 5:00 on other weekdays. During June, July, August, and until the first Monday after Labor Day, the Library was open from 1:00 to 9:00 on Tuesdays and from 9:00 to 5:00 on other weekdays, except Saturdays, when it was closed. The following legal holidays were observed: Thanksgiving, Christmas, New Year's, Memorial, Independence, and Labor Days.

Visitors:

	Reading Room	*Periodicals Room*	*Totals*
1967	9,557	4,295	13,825
1966	9,213	3,409	12,622

Circulation:

	Intra-Mural[5]	*Extra-Mural*	*Totals*
1967	33,425	37,525	70,950
1966	33,317	39,158	72,475

lections which are on permanent deposit in the Library: Gross Library, 3,976 accessioned items; Parry Library of the Obstetrical Society of Philadelphia, 217; Mütter Museum, 200 (Mütter Museum books may not be removed from the College building).

[4] Titles are only included in this count if issues were received in 1966 or 1967. The 1966 figures represent journal titles currently received, October 31, 1966. The 1967 figures represent journal titles currently received, December 31, 1967.

[5] The number of volumes "consulted in the library" includes only those supplied on demand. Readers have access to the bound volumes of periodicals and reference works kept on the shelves in the Reading Room; the Fellows, and occasionally others, by special permission, have access to the book stacks. There are, therefore, many volumes consulted of which no accurate record can be kept.

Circulation—Continued:

	Books	*Journals*	*Totals*
1967	11,670	59,280[6]	70,950
1966	12,282	60,193[7]	72,475

Interlibrary Loans: The Library sent 40,493 (1966: 27,359) volumes on interlibrary loan to 353 (1966: 300) libraries in 41 (1966: 33) states, Canadian Provinces and foreign countries. Included in 1967 figures are 7,155 articles photocopied for medical school and hospital libraries, but not the photoduplications noted immediately below.

Photoduplications: 159,685 pages were photocopied on request (1966: 139,816).

Donations

The donors for the past year number 98 (1966: 85). The Library is indebted for large gifts of books, pamphlets and unbound periodicals to the following donors: American College of Physicians; Dr. R. J. Gould; Jefferson Medical College; Drs. M. D. Kasser, R. A. Kern; Lea & Febiger; Franklin & Marshall College; Drs. R. B. Little, E. R. Long; Medical Literature, Inc., Dr. S. Mudd; National Foundation; Presbyterian Hospital; Smith Kline & French; Drs. J. A. Sterling, F. W. Sunderman; Temple University School of Medicine Wallace Laboratories; Dr. I. J. Wolman; Woman's Medical College Library.

Various publishing houses, among the large group of corporate donors, have presented volumes as follows: F. A. Davis Company, 33; Lea & Febiger, 18; J. B. Lippincott Co., 52; W. B. Saunders Co., 77.

Other individual donors were as follows: Drs. C. E. Albrecht, D. M. Aviado, O. V. Batson, W. J. Bell, Jr., H. M. Beumer, Miss E. Blackburn; Dr. W. S. Blakemore; Mrs. R. S. Bromer; Drs. I. N. Dubin, G. E. Farrer Jr., A. First, W. S. Haubrich, J. F. Huber, S. L. Israel; Mr. E. R. F. Johnson; Drs. H. C. Kinzer, H. S, Klickstein; Miss M. E. Knowles; Dr. S. O. Krasnoff; Mrs. E. B. Krumbhaar; Drs. F. H. Leavitt; I. H. Leopold, W. Likoff, J. L. McClenahan, T. M. McMillan, B. Malzberg, G. J. Martin; Mr. E. J. Neren; Drs. H. J. Nevyas; M. Orne, L. C. Parish, M. C. J. Pfeifeer, S. X Radbill, A. E. Rakoff, E. L. Ralston, F. B. Rogers; Prof. C. E. Rosenberg; Drs. J. L. A. Roth, M. Saltzman; Mrs. H. Sangree; Drs. H. G. Scheie, T. G. Schnabel, W. D. Sharpe, W. B. Shelley; Prof. R. H. Shryock; Drs. A. C. Singleton, W. A. Sodeman, P. Spaeth, W. Sussmann, J. E. Thompson, R. R. Trail, R. J. Walsh; Mrs. S. D. Weeder; Drs. J. R. Willson; C. L. Woodruff.

The Transactions & Studies was sent, either in exchange or as gift, to 557 organizations.

Theses and dissertations to the number of 404 have been received on exchange from the following European schools of medicine: Universities of Basel, Bern, Copenhagen, Erlangen, Lausanne, Leiden, Liège, Louvain, Lund, Uppsala, and Utrecht.

The Staff[8]

Librarian

Elliott H. Morse

Assistant to the Librarian

Mrs. Beatrice F. Davis

Library Secretary

Mildred C. Gray

Processing Dept.

Muriel Zeldis, Head

Cataloger

Carmine Salvato

Assistant Cataloger

Mrs. Kathryn Miragliotta

Junior Assistant

Mrs. Margaret Henry

Reference-Circulation Dept.

Alberta D. Berton, Head

Readers Service Assistants

Mrs. Eileen Binckley
Juneann Kasperowicz, Jr. Ass't.
Mrs. Kathryn Bernice Odom*
Matilde Zalinsky

Serials Dept.

Marybeth Honeyman, Head

Serials Assistants

Mrs. Catherine Ledwell
E. Naomi Frazer
Barbara D. Maurer
Matilde Zalinski
Virginia Thomas*

[6] This figure includes 6,845 unbound current journal issues circulated from the Periodicals Room.

[7] This figure includes 6,566 unbound current journal issues circulated from the Periodicals Room.

[8] Library Staff list as of February 1, 1968.

Historical Collections

W. B. McDaniel, 2d, Ph.D., *Curator*
Mrs. Lisabeth Holloway, *Associate Curator and Historical Cataloger*
Mrs. Janet Hennegan, *Historical Ass't.*

Paging Staff

Andrea L. Jancsura, Jr. Ass't.
Josefa Sereda, Jr. Ass't.
Stephan Bilynsky*
Samuel M. De Phillippo*
Veronica M. Enright
LaVerne K. Jackson
Judith A. Kimmel
Marlyn C. Merritt
Donna Pilson
Halina T. Wierzbicki*

Approved:
Samuel X Radbill, M.D.
Chairman, Library Committee

Medical Documentation Service

Eleanor W. Ashkenaz, Ph.D., *Scientific Dir.*
Alberta D. Berton, *Administrative Dir.*
Jean P. Carr, *Executive Secretary*
Marianne Das, *Abstractor/Translator*
Cassandra Donovan, *Lit/Sci/Abstractor*
Linda S. Franz, *Lit/Sci/Abstractor*
Elizabeth Wright, *Typist*
Robert Blackerby,* *Abstractor/Copy Editor*
Bethrotha Dent,* *Typist*
Mrs. Eleanor Taylor, *Bibliographer*

Resource Grant Program

Photocopy and TWX Section

Barbara D. Maurer
Linda Howell
Nancy Jessen
S. Augustus Young*

* Part-time workers.

Annual Report of the Committee on the Mütter Museum and College Collections

The year 1967 has been a busy one in the Mütter Museum. Beside the regular cleaning and care of the specimens, we have played host to classes from twenty-two different schools in addition to large numbers of individual visitors. Fortunately, Miss Dolores Garner was hired as an assistant to the curator in January on a part-time basis and has proved invaluable as a guide for the various tours. One thing that was especially rewarding was the fact that some schools made arrangements to bring several groups at different times.

The Dobbins Vocational School sent four groups of students who are studying to be medical technicians and medical secretaries. The instructor told us that matching the medical terminology with the actual diseased specimens was a great help to them.

While for several years we had groups of student nurses from only the Montgomery Hospital in Norristown, in 1967 others came from the St. Joseph's Hospital School of Nursing, Coatesville Hospital School of Nursing, Memorial Hospital at Roxborough, Maternity Department of the Hospital of the University of Pennsylvania, and the Episcopal Hospital.

Medical students from Temple University were introduced to the museum and library by their professor, Dr. Fred. B. Rogers. This is one large group that we can expect every year. Professor Arthur W. Moore brought some of his students from the Philadelphia College of Pharmacy and Science.

Other students of medical technology and those wishing to become medical secretaries came from the J. F. Kennedy School in Willingboro, New Jersey. This was their first visit, but the instructor told us it would not be their last.

Biology classes came from Clifton Heights High School, St. Leonard's Academy, Moravian Preparatory School, and Cherry Hill High School in New Jersey.

A very interested and intelligent class from Claymont High School in Delaware was especially welcome. The instructor told us that he brought only those students who were genuinely interested in seeing the contents of the museum, those who wanted to learn and were not merely curious.

So interested were the students from a biology club at the Lenape High School in Medford, New Jersey, that four different sections came on different days and plans were made to accomodate, at some future date, those remaining in a class of 300.

Almost every day individual students of medical technology or X-ray from the Franklin School of Science and Arts drop in to see the exhibits. It is very convenient for them because their school is very near to the College.

We do not know what it is in the museum that would interest the young ladies from Beaver College, but they seemed to enjoy the tour. The art class from the Moore College of Art was interested in the anatomy of the skeletons.

A nurse in the Naval Service, Miss Hall, brought three hospital corpsmen from the Philadelphia Naval Hospital who were interested in diseases of the nose and throat. They stayed about half a day and, like other groups, also visited the library.

Dr. Samuel X Radbill brought his class in pediatrics to the museum as he does every year, and they were shown exhibits of interest to them in that field.

The total number of visitors for the year was 2,578.

The museum permitted Dr. James Conway to photograph certain items in the Chevalier

Jackson Collection of Foreign Bodies to be used to illustrate a talk and also loaned photographs of museum specimens to be reproduced to illustrate an article in *Medical Affairs, University of Pennsylvania,* written by Dr. Francis C. Wood on the College and its museum.

The museum also loaned Miss Edith Rosenow, the artist, two old pharmacy jars and an antique microscope to be used as a background for the portrait of Dr. Wood that she is painting.

College Collections

Following the policy of the past several years, all accessions were catalogued in College Collections. However, they were exhibited as museum items.

Dr. Fred B. Rogers presented a *bronze medal of Georges Clemenceau* (1841–1929); a Becton-Dickinson & Co. *fever thermometer* formerly belonging to his father, Dr. Lawrence H. Rogers of Trenton, New Jersey, and a *ligature carrier* used for suturing structures such as the cystic duct or blood vessels in the prostatic region, also used by his father.

Dr. J. Monroe Thorington presented an *enterolith* composed of plant parts and hair—a large example of a bezoar used against dizziness, epilepsy and difficult child birth. This came from Engadine, Switzerland. He also presented *votive offerings* from Curacao, Netherlands Antilles.

Dr. Francis C. Wood presented a *spoon* used by three consecutive Surgeon Generals, namely, Dr. Leroy E. Burney, Dr. Luther L. Terry and Dr. William H. Stewart. Our portrait collection was augmented by an *oil painting of Dr. George W. Norris* by John Lambert, also presented by *Dr. Wood.*

The College collection of medals is gradually growing and *Dr. Esmond R. Long* supplied us with the following: *Semi-centennial of the Academy of Science of St. Louis, 1856–1906,* George Englemann, first president; *National Tuberculosis Association* struck in honor of the people who for 50 years carried forward crusades against tuberculosis; *Congress of Tuberculosis, Caracas, Venezuela; Congress of Sanitation, Caracas, 1946; Centennial of the National Academy of Sciences of the United States, 1863–1963.*

We received duplicate medals of the *Centennial Medal honoring the birth of R. Tait McKenzie,* one from *Dr. Samuel X Radbill* and the other from *Dr. William G. Leaman, Jr.*

A small *medallion of the International Congress of Dermatology in Munich, 1967* was presented by *Dr. Herman Beerman.*

The portrait of *William Thomson by Thomas Eakins* and the portrait of *Benjamin Rush attributed to Benjamin West* were repaired by the Newman Galleries.

The Committee on College Collections was happy to supply *Dr. Paul G. Kreider* of Springfield, Illinois, with a print of the *photograph of the Osler Clinic,* and a photograph of the *oil portrait of Dr. W. W. Keen* was sent to *Mr. Irwin Richman* of the William Penn Memorial Museum at Harrisburg, Pennsylvania.

Many suggestions have been made during the year by the members of the Committee on the Mütter Museum and College Collections for stimulating interest in both collections, and it is hoped these may be followed through to a conclusion in 1968.

Clark E. Brown, M.D.
Chairman

List of College Lectures, 1967

4 January 1967

Rock, John. Social Implications of Contraception (Nathan Lewis Hatfield Lecture LI.)

1 February 1967

Stead, Eugene A., Jr. The Circulation, Past and Present (Mary Scott Newbold Lecture XCII.)

1 March 1967

Stewart, William H. Social Goals in Public Health (James M. Anders Lecture XLVI; *Transactions & Studies*, July 1967.)

4 April 1967

Joint Meeting of the Philadelphia County Medical Society and The College of Physicians of Philadelphia.

I. Presentation of Certificates to Physicians who have completed fifty years in the practice of medicine. Certificates awarded by J. Everett McClenahan, M.D., President, Pennsylvania Medical Society.

II. Presentation of the Third Annual Kenneth E. Appel Award to Elliott M. Heiman, M.D., The Institute of the Pennsylvania Hospital, by Paul J. Poinsard, M.D., Chairman, Appel Award Committee.

III. Presentation of Awards of Merit for Voluntary Service in Viet Nam to Warren R. Lang, M.D., John M. Howard, M.D., and Anthony F. DePalma, M.D.

IV. Presentation of the Strittmatter Award to John Royal Moore, M.D., by Horace T. Caswell, M.D., Chairman, Strittmatter Award Committee.

3 May 1967

Rodan, Gerald P. Invitation to the Gout (Franklin Bach Memorial Lecture II; *Transactions & Studies*, October 1967).

4 October 1967

Sweet, William H. Lessons on Pain Control from Electrical Stimulation or Destruction (S. Weir Mitchell Oration XVIII *Transactions & Studies*, April 1968.)

4 November 1967

A Community Health Forum on Air Pollution, presented jointly by the Philadelphia County Medical Society and The College of Physicians of Philadelphia (James M. Anders Lecture XLVII, presented as a symposium; *Transactions & Studies*, April 1968.) Chairman: Francis C. Wood. Moderator: Leroy E. Burney. Participants: Richard L. Riley, Gordon Larson, Austin N. Heller

10 November 1967

180th Anniversary Reception. Address by Francis C. Wood, President, The College of Physicians of Philadelphia (*Transactions & Studies*, April 1968.)

6 December 1967

Ratcliffe, Herbert L. Environment, Behavior and Disease: Observations from the Philadelphia Zoo (Benjamin Musser Lecture X.)

Transactions of the Sections

SECTION ON MEDICAL HISTORY

7 March 1967

Benjamin Hornor Coates, M.D. (1797–1881): A Study Based on His Manuscripts. Marian S. Carson (*Transactions & Studies*, October 1967.)

Karl Menninger Looks at Psychiatric History. A Film Presentation.

Dr. Cadwalader Evans (1716–1773): Physician and Friend of Benjamin Franklin. Randolph Shipley Klein (*Transactions & Studies*, July 1967.)

18 April 1967

The Medical Mission Sisters. Sister M. Regis Polcino M.D. (Kate Hurd Mead Lecture XVIII; *Transactions & Studies*, July 1967.)

10 October 1967

Robert Henry Clarke (1850–1926): Victorian Physician and Scholar. Richard A. Davis, M.D.

Dr. William Rimmer and His *Art Anatomy*. Fred B. Rogers, M.D. (*Transactions & Studies*, January 1968.)

Dr. Samuel Duffield (1732–1814): Member of the First Medical Class Graduated in America. Randolph Shipley Klein (*Transactions & Studies*, January 1968.)

Reynell Coates (1802–1886): Politician, Poet, Editor, Naturalist, Lecturer and Physician. William J. Snape, M.D. (*Transactions & Studies*, January 1968.)

SECTION ON OPHTHALMOLOGY[1]

19 January 1967

The Rubella Syndrome: Pediatric Aspects. Stanley Plotkin, M.D.*

The Rubella Syndrome: Ophthalmologic Problems. Bernard Schaffer, M.D.*

The Rubella Syndrome: Ocular Pathology. Myron Yanoff, M.D.*

The Rubella Syndrome: Surgical Experiences. Harold G. Scheie, M.D.

16 February 1967

Orbital Phycomycoses. L. A. Wilson, M.D.* (Discusser: William C. Frayer, M.D.)

Migrating Embolus in a Retinal Arteriole. P. V. Palena, M.D.* (Discusser: T. Behrendt, M.D.*)

Pseudo-exfoliation of the Lens. A. K. Bunyor, M.D.* (Discusser: E. A. Jaeger, M.D.*)

Foster-Kennedy Syndrome—Non-Surgical Causes. N. J. Schatz, M.D.* (Discusser: T. D. Duane, M.D.)

16 March 1967

Liquid Center Golf Balls and Ocular Injury. M. Madison Slusher, M.D.* and Kenneth Jaegers, M.D.* (Discusser: William H. Annesley, M.D.)

Mycotic Keratitis—73 Cases. Godfried Naumann, M.D.,* William Richard Green, M.D.,* and Lorenz Zimmerman, M.D.* (Discusser: Peter Laibson, M.D.*)

Continuous Irrigation Techniques in Alkaline Burns to the Eye. Ben Houser, M.D.,* and Hunter R. Stokes, M.D.* (Discusser: Philip G. Spaeth, M.D.)

Optic Nerve Extension of Choroidal Melanoma. Kurt Gitter, M.D.,* and William Annesley, Jr., M.D. (Discusser: Charles Steinmetz, M.D.*)

20 April 1967

Lipemia Retinalis in Disorders of the Lipid Metabolism. Joseph Skettino, M.D.* (Discusser: Gary Carpenter, M.D.*)

Congenital Neuroectodermal Malformation of the Eye. Donald Ferretti, M.D.* (Discusser: James Arey, M.D.*)

[1] Abstracts of the presentations at this Section customarily appear in the *American Journal of Ophthalmology* and *A.M.A. Archives of Ophthalmology*.

* By invitation

Lowe's Syndrome—Report of Four Cases. George Bouras, M.D.* (Discusser: R. D. Harley, M.D.*)

19 October 1967

The Subnormal Vision Patient: Methods of Examination for Optical Aids. Sidney Weiss, M.D.

Contact Lenses for Ptosis. Louis Heyman* and Philip G. Spaeth, M.D.

Self-Inflicted Bilateral Enucleation. Maurice M. Meyer, M.D.* and Robert H. Trueman, M.D.

Uveitis Due to Rocky Mountain Spotted Fever. Thomas Cherubini, M.D.,* and George L. Spaeth, M.D.

Myotomies Versus Recession: Pro and Con. E. Howard Bedrossian, M.D., and Edmund B. Spaeth, M.D.

16 November 1967

The Sphingolipidoses and the Eye. David G. Cogan, M.D.,* Henry Willard Williams Professor of Ophthalmology and Director of Howe Laboratory, Harvard Medical School, Boston, Massachusetts. (Thirtieth Annual de Schweinitz Lecture.)

SECTION ON OTOLARYNGOLOGY[2]

18 January 1967

Prenatal Rubella. John Bordley, M.D.,* Professor and Director of the Department of Laryngology and Otology at the Johns Hopkins University Medical School.

15 March 1967

Chronic Ear Surgery in Children. J. H. Thomas Rambo, M.D.* (Discusser: Bernard Ronis, M.D.)

Vascular Procedures and Transplantation of the Canine Larynx. Max Som, M.D.,* and Carl Silver, M.D.* (Discusser: Clyde Barker, M.D.)

(Annual combined meeting with the Section on Otolaryngology of the New York Academy of Medicine, held in New York.)

15 November 1967

The Uses and Dangers of Antihistamine Therapy. Louis E. Silcox, M.D. (Discusser: Philip Marden, M.D.)

Unusual Foreign Bodies. William Baltzell, M.D.

The Application of Mediastinoscopy to Laryngeal Cancer. John A. Tucker, M.D. With film presentation. (Discusser: Gabriel Tucker, M.D., and Joseph Atkins, M.D.)

SECTION ON PUBLIC HEALTH, PREVENTIVE AND INDUSTRIAL MEDICINE

4 November 1967

A Community Health Forum on Air Pollution. Presented jointly by the Philadelphia County Medical Society and The College of Physicians of Philadelphia (James M. Anders Lecture XLVII, presented as a symposium; *Transactions & Studies*, April 1968.)

[2] Abstracts of the presentations at this Section customarily appear in the *A.M.A. Archives of Otolaryngology*.

Officers, Committees, Sections and Administrative Staff of the College 1968

President

Francis C. Wood

Vice-president

George I. Blumstein

Secretary

George A. Hahn

Treasurer

Kendall A. Elsom

Censors

Truman B. Schnabel
Jonathan E. Rhoads
John H. Gibbon, Jr.
David A. Cooper

Honorary Librarian

Richard A. Kern

Ex-Presidential Councillors

J. Parsons Schaeffer
Thomas M. Durant
T. Grier Miller
Lewis C. Scheffey

Elective Councillors

To serve until January 1969
Thomas F. Nealon, Jr.
Paul O. Klingensmith

To serve until January 1970
Alfred M. Bongiovanni
William F. Kellow

To serve until January 1971
Leroy E. Burney
Esmond R. Long

Council

The forenamed and the chairmen of the Standing Committees*

Library

Samuel X Radbill, ch'n
William T. Fitts, Jr.
J. Gershon-Cohen
E. Harold Hinman
Michael B. Shimkin

Hall

Paul J. Grotzinger, ch'n
Donald R. Cooper
Daniel J. Hilferty, Jr.
John L. McClenahan
Brooke Roberts

The President is an *ex officio* member of all Standing Committees.

Mütter Museum and College Collections

Fred B. Rogers, ch'n
Herbert E. Holling
William I. Gefter

Publication

Robert E. Jones, ch'n
Herman Beerman
Edithe J. Levit

APPOINTIVE STANDING COMMITTEES

Finance

George I. Blumstein, ch'n
John K. Clark
John H. Gibbon, Jr.
Edward C. Rosenow, Jr.
Treasurer, Vice-President and Chairman of the Planning Committee, *ex officio*

Entertainment

Paul Nemir, Jr., ch'n
Edwin W. Shearburn
Joseph B. Vander Veer

Membership

Robert S. Pressman, ch'n
H. Taylor Caswell
Henry Clagett, Jr.
Herbert E. Cohn
Archer P. Crosley, Jr.
George E. Farrar, Jr.
Alfred S. Frobese
Robert J. Gill
Edward E. Holloway
J. Stauffer Lehman
George W. Lilley
Wallace G. McCune
P. Robb McDonald
Dryden P. Morse
Thomas K. Rathmell
Brooke Roberts
William J. Snape
William C. Stainback
Joseph W. Stayman, Jr.
Katharine B. Sturgis
The Secretary, *ex officio*

Scientific Business

J. Russell Elkinton, ch'n
Bernard J. Alpers
Frank A. Elliott
Gordon N. French
Robert E. Jones
Fred B. Rogers
Elizabeth K. Rose
Alexander Rush
Samuel E. Rynes
Henry J. Tumen
Robert I. Wise

Public Health and Preventive Medicine

Elizabeth Kirk Rose, ch'n
Robert P. Barden
Lewis D. Polk
Joseph Stokes, Jr.
Patrick B. Storey

Planning Committee

Donald M. Pillsbury, ch'n
James B. Donaldson
Gordon H. French
John H. Gibbon, Jr.
Philip J. Hodes
Richard A. Kern
Glen R. Leymaster
T. Grier Miller
Edward C. Rosenow, Jr.
Michael B. Shimkin
Vaughan P. Simmons
Charles M. Thompson

SPECIAL COMMITTEES

Joseph N. Pew, Jr., Memorial Loan Fund

David A. Cooper, ch'n
T. Grier Miller
Truman G. Schnabel

S. Weir Mitchell Associates

George I. Blumstein, ch'n
Merle M. Miller, co-ch'n
Jonathan E. Rhoads, honorary ch'n

Thomas M. Durant, honorary ch'n
John H. Gibbon, Jr., honorary ch'n

Gifts and Bequests

Timothy R. Talbot, Jr., ch'n
Albert Behrend
John W. Eiman
Paul Sigmund Friedman
Mary DeWitt Pettit
George Parrott Rosemond
Charles M. Thompson
George Willauer

Friends of the Library

Merle M. Miller, ch'n
Robert Austrian
C. Nelson Davis
J. Wallace Davis
Jesse T. Nicholson
Thomas K. Rathmell
Roderick L. Tondreau

Regional Medical Library Committee

John F. Huber, ch'n
Marion Fay
Samuel X Radbill
J. Kapp Clark
Sherman Garrison
Richard H. Orr
Dean W. Roberts
Eugene C. Syrovatka
Jacqueline Bastille, Smith, Kline and French Laboratories
Catherine Brosky, Graduate School of Public Health, University of Pittsburgh
Fred D. Bryant, Hershey Medical College
Lucy F. Cooke, Hahnemann Medical College
Ruth Y. Diamond, Temple University Medical School
Ida J. Draeger, Woman's Medical College
Helen Lake, Philadelphia General Hospital
Robert T. Lentz, Jefferson Medical College
Elliott H. Morse, The College of Physicians of Philadelphia
Jerome S. Rauch, University of Pennsylvania Medical School
Richard L. Snyder, Drexel Institute

Greater Philadelphia Committee for Medical-Pharmaceutical Sciences

Thomas M. Durant, ch'n
Francis C. Wood, W. Wallace Dyer, and John Kapp Clark, *ex officio*
Hahnemann Medical College: John R. Beem, Joseph Di Palma, John H. Moyer
Jefferson Medical College: Julius M. Coon, Allan J. Erslev, William F. Kellow, Robert I. Wise
The Johns Hopkins University School of Medicine: Louis Lasagna
McNeil Laboratories, Inc.: Robert W. Ballard, Harry W. McNey, Lawrence Peters
Merck Sharp & Dohme: Elmer H. Funk, Jr., Frederick K. Heath, John J. Horan, F. Douglas Lawrason
The Milton S. Hershey Medical Center: George T. Harrell
Philadelphia College of Pharmacy and Science: Linwood F. Tice
Smith Kline & French Laboratories: Walter A. Munns, Maurice R. Nance, G. Frederick Roll, Francis Boyer, *ex officio*
Temple University School of Medicine: Robert M. Bucher, Leroy E. Burney, Marcus Reidenberg
Temple University School of Pharmacy: Henry B. Kostenbauder
University of Pennsylvania School of Medicine: Christian J. Lambertsen, Donald M. Pillsbury, I. S. Ravdin, Luther L. Terry
William H. Rorer, Inc.: Nelson H. Reavey Cantwell, John W. Eckman, Robert R. Smith
Woman's Medical College of Pennsylvania: Glen R. Leymaster, William K. Riker
Wyeth Laboratories: Russell A. Beeson, H. W. Blades, Robert J. Bower, Daniel L. Shaw

Committee for Planning of Building Requirements

Kendall A. Elsom, ch'n
J. Kapp Clark
John H. Gibbon, Jr.
Paul J. Grotzinger

John F. Huber
Richard A. Kern
John H. Moyer
Donald M. Pillsbury
H. Phelps Potter
Fred B. Rogers

Committee to Revise the By-Laws

John H. Gibbon, Jr. ch'n
Richard A. Kern
Donald M. Pillsbury
T. Grier Miller

PRIZE COMMITTEES AND TRUSTEES

Alvarenga Prize and Lectureship

Henry J. Tumen, ch'n
Allan J. Erslev
Norman Learner
Abraham E. Rakoff
Charles C. Wolferth, Jr.

Theodore F. Bach Memorial Lecture

Robert I. Wise, ch'n
Joseph L. Hollander
John Lansbury

Hira S. Chouké Lectureship

Samuel E. Rynes, ch'n
Philip M. Gottlieb
Burton Zweiman

Nathan Lewis Hatfield Prize and Lectureship

Frank A. Elliott, ch'n
James E. Clark
William J. Tuddenham

S. Weir Mitchell Oration

Bernard J. Alpers, ch'n
Elliott L. Mancall
William L. Peltz
Charles Rupp
Henry A. Shenkin

Benjamin Musser Lectureship

Alexander Rush, ch'n
Robert J. Gill
Edward C. Raffensperger

Mary Scott Newbold Lecture

Gordon N. French, ch'n
William Likoff
Fred B. Rogers

Trustees of Nathan Lewis Hatfield Prize and Lectureship

J. Montgomery Deaver
H. Curtis Wood, Jr.
Orville Horwitz

Trustee under the Will of Thomas Skelton Harrison

Merle M. Miller

OFFICERS OF THE SECTIONS

Medical History

Roderick L. Tondreau, ch'n
Harry G. Gianakon, clerk

Executive Committee: Robert J. Gill, Frank P. Brooks, Robert E. Jones

Ophthalmology

P. Robb McDonald, ch'n
William C. Frayer, clerk

Executive Committee: James S. Shipman, Glen G. Gibson, M. Luther Kauffman

Otolaryngology

Joseph P. Atkins, ch'n
Herbert J. Dietrich, Jr., clerk

Executive Committee: Philip A. Marden, William J. Hitschler, Herbert P. Harkins

Public Health, Preventive and Industrial Medicine

VAUGHAN P. SIMMONS, ch'n
SAMUEL R. MOORE, clerk

Executive Committee: FRED B. ROGERS, WILLIAM A. STEIGER, MICHAEL B. SHIMKIN

Librarian
ELLIOTT H. MORSE

Curator of Library Historical Collections
W. B. MCDANIEL, 2D

Curator of the Mütter Museum and Custodian of the College Collections
ELLAN N. WADE

Executive Secretary
OLGA E. LANG

Superintendent
THEODORE J. KOLODZIEJSKI

Editor, Transactions & Studies
ROBERT ERWIN JONES

Fellows

February 1, 1967

ELECTED

1967. Abbiss, Joseph W., St. Francis Hospital, 8th & Dupont Sts., Wilmington, Del. (19805)
1952. Abelson, Neva Martin, 220 Locust St. (19106)
1961. Adamson, William C., 1542 Susquehanna Rd., Rydal, Pa.
1926. Adler, Francis Heed, 8870 Towanda St. (19118)
1959. Adlin, Albert, 1512 Lindley Ave. (41)
1949. Aegerter, Ernest E., 3400 N. Broad St. (40)
1953. Agerty, Horst A., 1111 N. 63rd St. (19151)
1960. Ainsworth, Thomas H., Jr., 960 County Line Rd., Bryn Mawr, Pa.
1964. Albert, Seymour M., 255 S. 17th St. (19103)
1963. Albright, Edwin P., 512 E. Mt. Airy Ave. (18)
1967. Alexander, Charles M., 930 W. Sproul Road, Springfield, Pa. (19064)
1958. Alexander, John Deaver, Philadelphia General Hospital (4)
1962. Alexander, John Dewey, Jr., 330 S. 9th St. (7)
1935. Alpers, Bernard J., 111 North 49th St. (39)
1960. Ames, Mary D., 260 St. James Place (6)
1961. Amsterdam, Gerald H., Wyncote House, Wyncote, Pa.
1962. Annesley, William H., Jr., 39 Glendale Road, Upper Darby, Pa
1961. Anthony, Russell A., 385 Lancaster Ave., Haverford, Pa.
1961. Aponte, Gonzalo E., 1025 Walnut St. (7)
1930. *Appel, Kenneth E., 111 N. 49th St. (39)
1905. Appelman, Leighton Francis, Limekiln Pike & Twining Rd., Glenside, Pa. (19038)
1960. Arey, James B., 2600 N. Lawrence St. (33)
1959. Arkless, Henry A., 255 S. 17th St. (3)
1967. Armitage, Harry V., 400 E. 13th St., Chester, Pa. (19013)
1922. Arnett, John H., 2116 Pine St. (3)
1967. Aronson, Marvin E., Office of Medical Examiner, 13th & Wood Sts. (19107)
1952. Ash, Rachel, 326 S. 19th St. (19103)
1952. Aston, Melville J., 6 Circle Drive, Margate, N.J. (08402)
1944. Atkins, Joseph P., 1201 Knox Rd., Wynnewood, Pa.
1956. Atkinson, John B., 410 Township Line Rd., Havertown, Pa. (19083)
1935. Atlee, John L., Jr., 37 E. Orange St., Lancaster, Pa.
1952. Atlee, William A., 37 E. Orange St., Lancaster, Pa.
1963. Austrian, Robert, Hospital of the University of Pennsylvania (4)
1958. Ayella, Alered S., Jr., 1213 S. Broad St. (47)
1960. Bacon, Catherine L., 88 Gardiner Rd., Woods Hole, Mass. (02543)
1937. Bacon, Emily P., 803 E. Darby Rd., Havertown, Pa. (19083)
1958. Baer, Samuel, 5123 N. Broad St. (41)
1959. Baird, Henry Welles, III, 2600 N. Lawrence St. (33)
1952. Baier, Howard N., 1333 Chestnut St. (19107)
1952. Baker, Howard W., 3401 N. Broadway St. (40)
1963. Baker, Richard B., 1851 E. Allegheny Ave. (34)
1967. Baker, Richard P., Jr., Misericordia Hospital (19143)
1946. Baker, Walter W., 255 S. 17th St. (3)
1963. *Balin, Howard, 330 S. 9th St. (7)
1957. Baltzell, William Hewson, 1530 Locust St. (2)
1940. Barba, Philip S., 120 Erdenheim Road (18)
1943. Barden, Robert P., 8835 Germantown Ave. (18)
1939. *Barnshaw, Harold D., 526 Cooper St., Camden, N. J. (08102)

* S. Weir Mitchell Associate.

1957. *Barr, Stanley, 255 S. 17th St. (3)
1939. Bartle, Harvey, Jr., Glenbrook Medical Bldg., 864 County Line Rd., Bryn Mawr, Pa.
1963. Bassett, James G., 3300 Henry Ave. (19129)
1932. Batson, Oscar V., 3926 Pine St. (4)
1921. Bauer, Edward L., Alden Park Manor (44)
1933. Bauer, John T., 312 E. Second St., Moorestown, N. J.
1939. Baumann, Frieda, 200 N. Wynnewood Ave., Wynnewood, Pa.
1930. Beardwood, Joseph T., Jr., 1245 Highland Ave., Abington, Pa. (19001)
1952. *Bedrossian, E. Howard, 4501 State Rd., Drexel Hill, Pa.
1935. Beerman, Hermann, 255 S. 17th St. (3)
1942. Behrend, Albert, Coventry House, Valley Rd. & Coventry Ave. (19126)
1945. Behrend, Bernard, 5910 Greene St. (44)
1934. *Behrend, Moses, Rittenhouse Claridge, 18th & Walnut Sts. (3)
1949. Beizer, Lawrence H., 419 South 19th St. (46)
1936. Bell, Benjamin Tertius, 1941 Woodland Rd., Abington, Pa.
1956. Beller, Martin Leonard, 1936 Spruce St. (3)
1947. Bellet, Samuel, 2021 Spruce St. (3)
1956. Bemont, Owen, 5723 No. Park Ave. (41)
1968. Benenson, Abram S., 1025 Walnut St. (19107)
1959. Berk, Nathaniel G., 2534 W. Cheltenham Ave. (50)
1951. Bernstine, J. Bernard, 255 S. 17th St. (3)
1965. Berry, Richard G., 1025 Walnut St. (19107)
1956. Berry, Theodore J., 300 E. Lancaster Ave., Wynnewood, Pa. (19096)
1967. Beyer, Karl H., Jr., Merck Sharp & Dohme Res. Labs., West Point, Pa. (19486)
1957. Biele, Albert M., 1530 Locust St. (2)
1964. Biele, Flora H., 1530 Locust St. (19102)
1918. Billings, Arthur E., 2020 Spruce St. (3)
1957. Birdsall, Thomas M., 255 S. 17th St. (3)
1949. Bishop, Edward H., 811 Spruce St. (7)
1933. Bishop, Paul A., 1347 Waverly Rd., Gladwyne, Pa.
1944. *Blady, John V., Parkway House, 2201 Benjamin Franklin Pkwy. (30)
1960. Blake, Alton D., Jr., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1952. Blake, Paul O., 273 N. Lansdowne Ave., Lansdowne, Pa.
1958. Blakemore, William S., 419 S. 19th St. (46)
1917. Block, Frank B., A1124 Park Drive Manor (44)
1963. Block, Reuben, 1555 Haddon Ave., Camden, N. J.
1949. *Blumstein, George I., 2039 Delancey St. (3)
1929. *Bockus, Henry L., 250 S. 18th St. (3)
1962. Boggs, Thomas R., Jr., Children's Hospital, 1740 Bainbridge St. (46)
1928. *Boles, Russell S., Rittenhouse Plaza, 1901 Walnut St. (3)
1923. Bond, Earl D., Bryn Mawr Court, Bryn Mawr, Pa.
1961. Bongiovanni, Alfred M., 1740 Bainbridge St. (46)
1948. Bookhammer, Robert S., 264 Forrest Rd., Merion, Pa.
1931. Bortz, Edward Le Roy, Lankenau Medical Bldg. (19151)
1936. Bostwick, Delazon Swift, 1523 Sweetbriar Rd., Gladwyne, Pa.
1947. Bourland, Henry S., 2219 Garret Rd., Drexel Hill, Pa.
1961. Bouzarth, William F., Episcopal Hospital (19125)
1961. Bove, Frank A., 2301 Pennsylvania Ave. (30)
1954. Bowers, Paul A., 2031 Locust St. (3)
1942. Bowie, Morris A., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1963. Boyer, Randal A., Holy Redeemer Hospital, Meadowbrook, Pa.
1964. Brackin, John T., Jr., Lansdale Clinic Bldg., S. Broad St. & Allentown Rd., Lansdale, Pa. (19446)
1965. Brady, Anna M., W. Queen Lane (19129)
1959. Brady, Luther W., 230 N. Broad St. (19102)
1954. Bralow, S. Philip, 3701 N. Broad St. (40)

---

* S. Weir Mitchell Associate.

1942. Branen, William T., Whitby & Cypress Aves., Yeadon, Pa.
1921. Bransfield, John W., 2031 Locust St. (3)
1948. Braun, William, 406 Cooper St., Camden, N. J. (08102)
1953. *Brav, Solomon S., 5575 N. Park Ave. (41)
1953. Breckenridge, Robert L., 414 Haddon Ave., Collingswood, N. J. (08108)
1964. Brenman, Arnold K., 3701 N. Broad St. (19140)
1966. Brent, Robert L., Jefferson Medical College (19107)
1961. Breslow, Irwin H., 1924 Panama St. (19103)
1946. *Briscoe, Clarence Conway, 811 Spruce St. (7)
1953. Brobeck, John R., Univ. of Pa. School of Medicine (4)
1958. Brody, Henry, Einstein Medical Center, York & Tabor Rds. (41)
1965. Brody, Jerome I., Graduate Hospital, 19th & Lombard Sts. (19146)
1952. Brody, Morris W., 2 W. Levering Mill Rd., Cynwyd, Pa. (19004)
1948. Brogan, Edmund J., 1020 Cedargrove Rd., Wynnewood, Pa.
1958. Brooks, Frank P., Hospital of the Univ. of Pa. (4)
1936. *Brown, Clark E., Lancaster Ave. & City Line Ave. (19151)
1932. *Brown, Claude P., 1930 Chestnut St. (3)
1967. Brown, Clement R., Jr., Chestnut Hill Hospital (19118)
1963. Browne, Laurence T., Presidential Apts., D126 (19131)
1961. Brunt, Manly Y., 111 N. 49th St. (39)
1939. Brust, Raymond M., 301 Mill Rd., Havertown, Pa. (19083)
1953. Bucher, Robert M., 3401 N. Broad St. (40)
1961. Buerk, Minerva S., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1962. *Burgoon, Carroll F., Jr., Skin & Cancer Hospital, 3322 N. Broad St. (19140)
1940. *Burnett, W. Emory, 3401 N. Broad St. (40)
1962. Burney, Leroy E., 3400 N. Broad St. (40)
1966. Burns, William P., 3400 Spruce St. (19104)
1954. Burros, Harry M., 419 S. 19th St. (46)
1966. Burstein, Frank, 8541 Bustleton Ave. (19152)
1941. Butler, Miriam, Watersmeet, Glen Mills, Pa.
1957. *Butterworth, Thomas, 411 Walnut St., Reading, Pa.
1965. Byron, Harold J., Wyncote House, Wyncote, Pa.
1966. Cahn, Milton M., 1930 Chestnut St. (19103)
1957. Calhoun, John Alfred, Jr., 214 Elm Ave., Swarthmore, Pa.
1958. Cameron, Charles S., 235 N. 15th St. (2)
1962. Camishion, Rudolph C., 1025 Walnut St. (7)
1952. Campbell, Edward W., Abington Memorial Hospital
1944. Campion, Richard J., Box 136, Springhouse, Ambler, Pa.
1964. Cancelmo, Jesse J., Jr., 337 W. Lancaster Ave., Wayne, Pa.
1967. Carabasi, Ralph A., 255 S. 17th St. (19103)
1935. Carey, Lawrence S., 2241 Garrett Road, Drexel Hill, Pa.
1930. Carpenter, Chapin, 502 Chestnut Lane, Wayne, Pa.
1959. Carrington, Elsie R., Woman's Medical College (29)
1960. Carroll, Robert T., 1015 Chestnut St., Jefferson Bldg., Room 803 (19107)
1917. Carson, John B., Newtown Square, Pa.
1956. Carty, James Byron, 51 Hampden Rd., Upper Darby, Pa.
1956. Casey, Paul R., 8350 Roosevelt Blvd. (19152)
1943. Castigliano, S. Gordon, Central & Shelmire Aves. (19111)
1949. Caswell, H. Taylor, 3401 N. Broad St. (40)
1954. Catenacci, Alfred J., 343 Winding Way, Merion Station, Pa.
1954. Cathcart, Richard T., Jefferson Hospital, 1025 Walnut St. (7)
1950. *Chamberlain, Richard H., 3400 Spruce St. (4)
1939. Chamberlin, George W., Reading Hospital, Reading, Pa.
1967. Chambers, Richard A., 1025 Walnut St. (19107)
1966. Chamblin, William D., 3717 Chestnut St. (19104)
1945. Chance, Burton, Jr., 4400 Baltimore Ave. (19104)

* S. Weir Mitchell Associate.

1958. Channick, Bertram J., 3701 N. Broad St. (19140)
1954. *Charny, Charles W., 2039 Delancey Pl. (3)
1966. Chernoff, Benjamin, 6901 Old York Rd. (19126)
1960. Chirico, Anna-Marie, Hosp. of Univ. of Pa. (4)
1966. Chisum, Melvin J., 245 N. Broad St. (19107)
1945. Cianfrani, Theodore, 1930 Chestnut St. (3)
1939. Ciccone, Emmet F., 2000 Willowbrook Rd., Huntingdon Valley, Pa. (19006)
1960. Cinquino, Mario A., 1518 S. Broad St. (16)
1960. Clader, Stanley C., 825-A Glenbrook Ave., Bryn Mawr, Pa.
1951. Clagett, A. Henry, Jr., 515 W. Eighteenth St., Wilmington, Del. (19802)
1966. Clark, Gerald R., Elwyn School, Elwyn, Pa. (19063)
1962. Clark, James E., 1015 Chestnut St. (7)
1951. Clark, John K., 347 Aubrey Rd., Wynnewood, Pa. (19096)
1947. Clark, Thomas Williams, 218 W. Chestnut Hill Ave. (18)
1963. Cleveland, Albert F., 615 Morgan Ave., Drexel Hill, Pa.
1958. Closson, Edward W., 2320 S. Broad St. (45)
1910. Cloud, J. Howard, Alden Park Manor (19144)
1949. Cohen, Louis B., 1320 Arrott St. (24)
1953. Cohen, Robert V., 520 Spring Ave., Elkins Park 17, Pa.
1967. Cohen, Sarle H., 1201 W. Olney Ave. (19141)
1965. Cohn, Edwin M., 1351 Tabor Rd. (19141)
1964. Cohn, Herbert E., 829 Spruce St. (19107)
1934. Collins, Leon Howard, Jr., 133 S. 36th St. (4)
1949. Conger, Kyril B., 3401 N. Broad St. (40)
1961. Coon, Julius M., 1025 Walnut St. (7)
1945. Coonel, Pauline, 47 E. Mt. Pleasant Ave. (19)
1930. *Cooper, David A., 1328 Medford Rd., Wynnewood, Pa. (19096)
1953. *Cooper, Donald R., Woman's Medical College, 3300 Henry Ave. (29)
1960. Cooper, Edward Sawyer, 6710 Lincoln Drive (19)
1947. Coppolino, John F., 1807 S. Broad St. (45)
1952. *Corbit, John D., Jr., 3717 Chestnut St. (4)
1959. Cormeny, George F., 3818 Chestnut St. (4)
1965. Cornelison, Floyd S., Jr., 1025 Walnut St. (19107)
1941. Cornelius, Chalmers E., 119 Summit Ave., Jenkintown, Pa.
1911. Cornell, Walter S., Board of Public Education, Parkway and 21st St. (3)
1940. Cowan, Thomas H., 1930 Chestnut St. (3)
1967.**Cox, J. William, U.S. Naval Hospital (19145)
1966. Cram, Robert H., 918 County Line Rd., Bryn Mawr, Pa. (19010)
1947. *Crane, A. Reynolds, Pennsylvania Hospital (7)
1937. Crane, Martin P., 2435 Germantown Ave. (19133)
1952. Crellin, J. Antrim, 1930 Chestnut St. (3)
1968. Crichlow, Robert W., 3400 Spruce St. (19104)
1955. Crist, Walter A., 211 N. 5th St., Camden, N. J.
1963. Crosley, Archer P., Jr., The Presbyterian Hospital (4)
1959. Cullen, Milton L., 1936 Cottman Ave. (19111)
1962. Cunningham, John D., 3400 Spruce St. (4)
1934. Custer, R. Philip, 643 Moreno Road, Narberth, Pa.
1958. D'Alonzo, Walter A., 1647 S. 15th St. (45)
1938. Dannenberg, Arthur M., Sr., 235 S. 15th St. (2)
1951. Daugherty, Earl A., Lankenau Medical Bldg. (19151)
1953. Davie, John H., 37 S. 20th St. (3)
1947. *Davis, C. Nelson, 524 Howe Rd., Merion Station, Pa.
1936. Davis, David M., 960 County Line Rd., Bryn Mawr, Pa. (19010)
1957. Davis, John Evan, Tedwyn Apts., 840 Montgomery Ave., Bryn Mawr, Pa.
1951. *Davis, J. Wallace, 135 18th St. (3)

---

* S. Weir Mitchell Associate.
** Military Service.

1961. Dawber, Bryan A., Penn Mutual Life Insurance Co. (5)
1963. Day, H. James, Temple University Hospital (19140)
1935. *Deaver, J. Montgomery, Lankenau Medical Bldg. (19151)
1957. Decker, John Paul, Pennsylvania Hospital (7)
1957. Dees-Porch, Frances, Glendale Road & Chestnut Sts., Upper Darby, Pa.
1947. Dehne, Theodore L., Adams Avenue and Roosevelt Blvd. (24)
1958. Deitz, George W., III, 2240 Pine Rd., Huntingdon Valley, Pa.
1965. Delaney, William E., III, 11th & Sansom Sts. (19107)
1955. De Long, Samuel L., 223 Lancaster Ave., Devon, Pa.
1952. DeLuca, Charles Q., 255 S. 17th St. (3)
1952. De Orsay, Ralph H., 1241 Lindale Ave., Drexel Hill, Pa.
1951. *De Palma, Anthony F., 248 S. 21st St. (3)
1963. Derham, Robert J., McClatchy Bldg., Upper Darby, Pa.
1966. deRivas, Carmela F., Stanbridge & Sterigere Sts., Norristown, Pa.
1959. DeTuerk, John J., 1930 Chestnut St. (3)
1959. Dickens, Helen O., University of Pa. Hosp. (19104)
1968. Dickensheets, James G., 223 S. 6th St., Camden, N.J. (08103)
1958. Dickstein, Benjamin, 6810 Castor (24)
1956. Dietrich, Herbert James, Jr., Hospital of the University of Pennsylvania (4)
1952. Digilio, Victor A., 2200 St. James Place (17)
1963. DiMarino, Anthony J., 735 Delaware St., Paulsboro, N. J.
1960. Dinon, Louis R., 330 S. 9th St. (7)
1920. Doane, Joseph C., 5286 34th Ave., N., St. Petersburg, Fla. (33710)
1948. Dohan, Francis Curtis, 80 Princeton Road, Cynwyd, Pa.
1954. Donaldson, James B., 3401 N. Broad St. (19140)
1946. Donnelly, Andrew J., American Oncologic Hosp. (19111)
1967. Donnelly, Joseph C., Jr., Lankenau Medical Bldg. (19151)
1937. Donnelly, Robert T. M., 5205 N. Broad St. (41)
1962. Dorman, Philip J., Fidelity Mutual Life Insurance Co. (1)
1967. Dougherty, Malvin J., 34 Copley Rd., Upper Darby Pa. (19082)
1964. Dratman, Mary B., Woman's Medical College, Henry Ave. & Abbottsford Road (19129)
1952. Drayer, Calvin S., 111 N. 49th St. (39)
1949. *Dripps, Robert D., 3400 Spruce St. (4)
1944. Dublin, George J., 1930 Chestnut St. (3)
1935. Duncan, Garfield G., 330 S. 9th St. (7)
1966. Duncan, Theodore G., 330 S. Ninth St. (19107)
1953. Dupler, Donald A., 4028 Walnut St. (4)
1966. DuPree, Richard H., 414 Cooper St., Camden, N. J. (08102)
1942. *Durant, Thomas M., Einstein Medical Medical Center, N.D., York & Tabor Rds. (19141)
1942. Dyer, W. Wallace, Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1962. D'Zmura, Thomas L., Presidential Apts., City Line Ave. & Presidential Blvd. (19131)
1936. Easby, Mary Hoskins, R. D. 1, Burlington, Vt.
1948. Eaton, Francis H., 4007 Chestnut St. (39)
1964. Eberlein, Walter R., 1740 Bainbridge St. (19146)
1944. Eger, Sherman A., 255 S. 17th St. (3)
1966. Ehrlich, George E., Albert Einstein Medical Center, N.D. (19141)
1956. Eiman, John W., Abington Memorial Hospital, Abington, Pa.
1962. Eisenberg, Samuel W., 3536 N. Broad St. (40)
1959. Eisenhower, James S. D., Jr., 2704 Pacific Ave., Wildwood, N. J.
1958. *Eisman, Sylvan H., 3600 Spruce St. (4)
1959. Elias, Elmer J., 10 Monticello Ave., Trenton, N. J.
1949. Elkinton, J. Russell, Oak Lane, Moylan, Pa.
1961. Elliott, Frank A., 807 Spruce St. (7)
1957. Ellis, Richard A., 255 S. 17th St. (3)
1955. Ellis, Samuel, 275 Bryn Mawr Ave., Bryn Mawr, Pa. (19010)
1939. Ellis, Van Mashburn, 1528 Spruce St. (2)

---

* S. Weir Mitchell Associate.

1928. Ellison, Richard T., Medical Office Bldg., 1245 Highland Ave., Abington, Pa. (19001)
1936. Ellson, J. Vernon, Glendale Road & Chestnut St., Upper Darby, Pa.
1937. *Elsom, Kendall A., Scott Paper Co. (13)
1932. Engel, Gilson C., Lankenau Medical Bldg. (19151)
1945. *English, O. Spurgeon, 449 Righters Mill Rd., Narberth, Pa.
1965. Epstein, Isadore S., 5219 Lebanon Ave. (19131)
1942. Erb, William H., 133 S. 36th St. (4)
1957. Erdman, William James, II, 3400 Spruce St. (4)
1965. Erslev, Allan J., 1015 Sansom St. (19107)
1957. Etzl, Michael M., 9025 Frankford Ave. (14)
1955. Eynon, Harold K., Route 70 at East Gate, Barclay Farm, Haddonfield, N. J.
1946. Farell, David M., 1912 Spruce St. (3)
1903. Farr, Clifford B., Railroad Ave. & County Line Rd., Bryn Mawr, Pa.
1945. Farrar, George Elbert, Jr., 528 Scott Rd., Gladwyne, Pa.
1953. Farrell, Harry L., 1930 Chestnut St. (3)
1964. Faust, Herbert A., 245 N. Broad St. (19107)
1935. *Ferguson, Lewis Kraeer, 928 Merion Square Rd., Gladwyne, Pa. (19035)
1936. *Fetter, Ferdinand, 322 S. 21st St. (3)
1945. Fetter, John S., 1980 Country Club Dr., Huntingdon Valley, Pa. (19006)
1952. *Fields, Harry, 133 S. 36th St. (4)
1959. Fineberg, Charles, 255 S. 17th St. (3)
1955. Finestone, Albert J., 3701 North Broad St. (40)
1960. Finkbiner, Rodman B., 811 Spruce St. (7)
1943. *Finkelstein, Arthur K., Graduate Hospital (46)
1955. Finkelstein, David, 419 S. 19th St. (46)
1955. *Finley, John K., 527 Welsh St., Chester, Pa.
1954. *Finn, Joseph L., 8014 Burholme Ave. (11)
1947. First, Arthur, 1714 Spruce St. (3)
1954. Fischer, Carl C., Penn Towers Apt. (19103)
1950. *Fischer, H. Keith, School Lane House, 5450 Wissahickon Ave. (19144)
1962. Fischer, George R., III, 801 Spruce St. (7)
1958. Fisher, Robert M., 118 Airdale Rd., Rosemont, Pa.
1956. Fite, Franklin K., Germantown Hospital (44)
1952. Fitts, William T., Jr., 3400 Spruce St. (4)
1952. Flexner, Louis B., 248 Anatomy-Chemistry Bldg., Univ. of Pa. (4)
1928. *Flick, John B., 819 Black Rock Rd., Gladwyne, Pa.
1939. Flippin, Harrison F., R.D. 2, Douglassville, Pa. (19518)
1957. Fornwalt, George R., 47 Copley Rd., Upper Darby, Pa.
1954. Forster, H. Walter, Jr., 37 S. 20th St. (3)
1960. Foulger, John H., 601 Rockwood Rd., Wilmington, Del. (2)
1941. Fox, C. Calvin, 1806 Spruce St. (3)
1963. Fox, Eva F., Woman's Medical College (19129)
1963. Frank, Paul E., York Road & Summit Ave., Hatboro, Pa.
1963. Frank, Robert L., 1282 Rydal Rd., Rydal, Pa. (19046)
1955. Frayer, William C., 37 S. 20th St. (3)
1941. Frazier, William Doane, 419 Gilpin Rd., Narberth, Pa.
1952. Freed, Herbert, 255 S. 17th St. (3)
1956. Freeman, Joseph T., 8-A Rittenhouse Plaza (3)
1963. Frieman, Henry D., 1500 Hellerman St. (49)
1958. Friewald, Milton J., 222 S. 19th St. (3)
1964. French, Gordon N., Univ. of Pa. Sch. of Medicine (19104)
1955. Friedenberg, Zachary B., 133 S. 36th St. (4)
1951. Friedman, Paul Sigmund, 1422 Chestnut St. (2)
1960. Friedman, Sidney, 1740 Bainbridge St. (46)
1958. Frisch, Frederick, 888 Glenbrook Ave., Bryn Mawr, Pa.
1937. Fritz, Herbert H., Pennswood Rd., Bryn Mawr, Pa.

* S. Weir Mitchell Associate.

1961. Frobese, Alfred S., Abington Memorial Hosp., Abington, Pa.
1953. Fruchter, Joseph M., The Philadelphian, 2401 Pennsylvania Ave. (19130)
1935. Fry, Wilfred Eyles, 1930 Chestnut St. (3)
1963. Furgiuele, Francis P., 5430 Greene St. (19144)
1937. Furlong, Thomas F., Jr., Times Medical Building, Ardmore, Pa.
1967. Futcher, Palmer H., 3930 Chestnut St. (19104)
1964. Galligan, William J., 2909 Garrett Road, Drexel Hill, Pa.
1954. Gambescia, Joseph M., 1422 Race St. (2)
1966. Garcia, Celso-Ramon, University Hospital (19104)
1951. Garlichs, Richard W., 216 N. Manoa Road, Havertown, Pa.
1931. Garner, Vaughn C., 477 East Wadsworth St. (19)
1953. Garnet, James D., 807 Spruce St. (7)
1959. Gartland, John J., 269 S. 19th St. (3)
1950. Garvin, Eugene J., 533 S. 46th St. (43)
1958. Geckeler, George D., 22 W. Bells Mill Rd. (19118)
1952. Gefter, William I., Episcopal Hosp. (19125)
1935. Geist, Donald C., 301 E. City Line, Bala-Cynwyd, Pa.
1955. Gelfand, David, 1722 Pine St. (3)
1965. Georges, Thomas W., Jr., The Health & Welfare Bldg., 7th & Forster Sts., Harrisburg, Pa. (17102)
1941. *Gershon-Cohen, J., 255 S. 17th St. (3)
1959. Gerson, Irvin M., Cedarbrook Apts., Cedarbrook Hills, Wyncote, Pa. (19095)
1955. Gettes, Bernard C., 128 Overhill Rd., Cynwyd, Pa.
1963. Giambalvo, Giacchino P., 818 N. 63rd St. (19151)
1965. Gianakon, Harry G., 111 N. 49th St. (19139)
1934. *Gibbon, John H., Jr., 2103 N. Providence Rd., Media, Pa. (19063)
1939. *Gibson, Glen Gregory, 2031 Locust St. (3)
1944. Gieford, Edward S., Jr., 1913 Spruce St. (3)
1956. Gilbert, Philip D., Cooper Hospital, Camden, N. J.
1967. Gilbert, Robert P., 1025 Walnut St. (19107)
1947. Giletto, Basil J., 2020 Locust St. (3)
1955. Gill, Robert J., 801 Spruce St. (7)
1922. Gilmour, William R., 6616 Woodland Ave. (42)
1952. Gilpin, Sherman F., Jr., 1023 Beury Building, 3701 N. Broad St. (40)
1963. Gindhart, Floyd D., 1213 Hamilton Avenue, Trenton, N. J.
1965. Ginley, Thomas H., Jr., Presidential Apts. (19131)
1949. Ginsburg, Isadore W., 3401 N. Broad St. (40)
1958. Girsh, Leonard S., 3701 N. Broad St. (40)
1954. Gislason, Gerhard J., 245 N. Broad St. (7)
1967. Glauser, Stanley C., 1709 Spruce St. (19103)
1964. Gloeckner, M. Louise C., 110 E. Fourth Ave., Conshohocken, Pa.
1956. Goldberg, Harry, 7913 Rolling Green Rd., Cheltenham, Pa.
1965. Goldburgh, Warren P., 1932 Spruce St. (19103)
1958. Golub, Leib J., 136 S. 16th St. (2)
1963. Goluboff, Bernard, 413 W. Mermaid Lane (19118)
1965. Goodman, David H., 6816 Castor Ave. (19149)
1956. Goracci, Armando F., Medical Arts Bldg., Woodbury, N. J. (08096)
1937. Gordon, William, 5345 Spruce St. (39)
1968. Gordy, Philip D., 1025 Walnut St. (19107)
1964. Gottlieb, Harry, 5603 Greene St. (19144)
1964. Gottlieb, Philip M., 818 Medical Arts Bldg., 16th & Walnut Sts. (19102)
1965. Gould, R. John, Delaware County Memorial Hospital, Drexel Hill, Pa.
1967. Gould, Robert A., 701 N. Pennsylvania Ave., Morrisville, Pa. (19067)
1956. *Gouley, Benjamin, 1201 W. Olney Ave. (19141)
1966. Gowen, George F., Misericordia Hospital (19143)
1957. Grahn, Henry Victor, 5132 Chester Ave. (43)

---

* S. Weir Mitchell Associate.

1966. Grant, B. David, 918 County Line Road, Bryn Mawr, Pa. (19010)
1965. Grassi, Michael O. A., 2038 Locust St. (19103)
1965. Greenbaum, Charles H., 6810 Castor Ave. (19149)
1940. Greene, Lloyd B., 803 Spruce St. (7)
1952. *Grfening, Roy R., Dept. of Radiology, Lankenau Hosp. (19151).
1958. *Greenspan, Benjamin, 1319 W. Tabor Rd. (41)
1955. Greenstein, Raphael H., 1710 Pine St. (3)
1941. *Groff, Robert A., Univ. of Pa. Hospital (4)
1952. *Grotzinger, Paul J., 2121 Valley Rd., Huntingdon Valley, Pa.
1952. *Grove, D. Dwight, 5025 N. Marvine St. (19141)
1966. Guthrie, Marshall B., 1500 Spring Garden St. (19101)
1945. György, Paul, Philadelphia General Hospital (19104)
1935. Hadden, Samuel B., 135 S. 19th St. (19103)
1945. Hahn, George A., 255 S. 17th St. (3)
1967. Haines, Keith E., 300 S. Broadway, Camden, N.J. (08103)
1964. Hall, John H., 3401 N. Broad St. (19140)
1955. Hallahan, John D., 104 W. Front St., Media, Pa.
1951. Hallett, Joseph W., 136 S. 16th St. (2)
1961. Hammett, Van Buren O., 249 N. Broad St. (19107)
1967. Hammond, Jonathan A., 433 Bellevue Ave., Trenton, N.J. (08618)
1954. Hand, B. Marvin, 1801 Pennsylvania Blvd. (3)
1938. Hand, John G. 1724 Pine St. (3)
1964. Hanes, Robert B., 501 Long Lane, Upper Darby, Pa.
1947. Hanes, William James, 218 E. Beechtree Lane, Wayne, Pa.
1963. Hanhausen, Edward H., 418 E. Lancaster Ave., Wayne, Pa.
1950. Hansen, A. Victor, 910 Centennial Rd., Penn Valley, Narberth, Pa. (19072)
1956. Harbert, Frederick, Jefferson Hospital (7)
1952. Harper, W. Benson, State Rd. & Rogers Ave., Bywood, Pa.
1951. Harkins, Herbert P., 1930 Chestnut St. (3)
1966. Harner, Richard N., Graduate Hospital (19146)
1966. Harrington, Edwin D., Jefferson Medical College (19107)
1963. Harris, Charles, 5301 Old York Road (41)
1962. Harris, James R., 3222 W. Penn St. (19129)
1959. Harris, James S. C., 5401 Wayne Ave. (44)
1948. Harris, T. N., 5112 Woodbine Ave. (31)
1929. Harrison, Francis G., 1900 Spruce St. (3)
1964. Hart, Alonzo W., 847 N. 63rd St. (19151)
1926. Hartmann, Fred I., 1914 Pine St. (3)
1961. Harvie, Fred H., 3400 Spruce St. (4)
1935. *Haskell, Benjamin F., 1427 Spruce St. (2)
1958. Haupt, George J., Lankenau Medical Bldg. (51)
1960. Hausman, David H., Pennsylvania Hospital, 8th & Spruce Sts. (7)
1947. Havens, Walter Paul, Jr., 139 Cheould Lane, Haverford, Pa.
1947. *Hawthorne, Herbert R., 3625 Darby Rd., Bryn Mawr, Pa. (19010)
1963. Hayes, Merrill B., 710 Madison St., Chester, Pa.
1952. Hayllar, Benjamin L., 803 Spruce St. (7)
1961. Hayward, Malcolm L., 111 N. 49th St. (39)
1961. Heath, Frederick K., Merck Sharp and Dohme, West Point, Pa.
1964. Heath, Robert D., Lankenau Medical Bldg. (19151)
1957. Hedges, Thomas R., Jr., 330 South 9th St. (7)
1961. Heggestad, Gilman E., Conestoga Medical Bldg., Bryn Mawr, Pa.
1965. Heil, Charles G., Jr., The Benson East, Jenkintown, Pa. (19046)
1965. Heine, William I., 5579 N. Park Ave. (19141)
1967. Helwig, John, Jr., Germantown Hosp. (19144)
1944. Herbut, Peter A., Dept. of Pathology, Jefferson Medical College Hospital (7)
1954. Herron, James R., 1486 Haddon Ave., Camden 3, N. J.

* S. Weir Mitchell Associate.

1963. Hesch, Joesph A., Misericordia Hospital (19143)
1949. Heyl, W. Meredith, 100 W. Coulter St. (44)
1961. Hilferty, Daniel J., Jr., Sutton Terrace Apts., 50 Belmont Ave., Bala-Cynwyd, Pa.
1952. Hinkson, DeHaven, 329 N. 40th St. (4)
1962. Hinman, E. Harold, 1025 Walnut St. (7)
1924. Hirst, John C., 2d., 2016 Rittenhouse Sq. (19103)
1943. Hitschler, William J., Bethlehem Pike & Summit (18)
1944. Hneleski, Ignatius S., 802 S. 48th St. (43)
1943. Hockaday, Agnes, 316 Shadeland Ave., Drexel Hill, Pa.
1939. *Hodes, Philip J., Dept. of Radiology, Jefferson Medical College (7)
1947. *Hodges, John H., 1025 Walnut St. (7)
1963. Hoffman, Carl J., 2901 Cottman Ave. (19149)
1959. Hoffman, Francis H., 3401 N. Broad St. (40)
1948. Hoffman, George L., Jr., 133 S. 36th St. (4)
1965. Holfelner, Edward D., Chestnut St. & Ashby Road, Upper Darby, Pa.
1964. Hollander, George, 3500 Vista St. (36)
1949. Hollander, Joseph L., 36th & Spruce Sts. (4)
1964. Holling, Herbert E., 3400 Spruce St. (19104)
1951. Hollis, Charles B., The Cambridge Apts. (19144)
1952. Holloway, Edward E., 1736 Pine St. (3)
1966. Holly, Roy G., 1025 Walnut St. (19107)
1966. Holter, F. Robert, 1911 Spruce St. (19103)
1949. Hopkins, Henry U., Garden Court Plaza, 47th & Pine Sts. (43)
1953. Horan, Charles A., 734 N. 63rd St. (19151)
1946. Horan, Gerald W., Marple-Newton Medical Bldg., Newtown Square, Pa.
1947. *Horwitz, Orville, Hospital of the University of Pennsylvania (4)
1950. Houlihan, Carl T., 207 McClatchy Bldg., Upper Darby, Pa.
1944. Housel, Edmund L., 255 S. 17th St. (3)
1958. *Howard, John M., 230 N. Broad St. (2)
1964. Howland, Alvin Wilcox, School Lane House (44)
1946. Howson, John Yeatts, 316 Lancaster Ave., Wayne, Pa.
1951. Hubbard, John P., 3930 Chestnut St. (19104)
1947. *Huber, John Franklin, Temple University School of Medicine (40)
1937. Hughes, Joseph, 111 N. 49th St. (39)
1939. Hughes, P. Boland, 419 Hillbrook Rd., Bryn Mawr, Pa.
1951. Hundley, J. Warren, 3818 Chestnut St. (4)
1954. Hunsicker, William C., Jr., 255 S. 17th St. (3)
1946. Hunt, William T., Jr., 6 Penn Center Plaza (3)
1921. Hunter, Robert John, 928 N. 63rd St. (19151)
1967. Huth, Edward J., American College of Physicians, 4200 Pine St. (19104)
1952. Hyman, Harold L., 3401 N. Broad St. (40)
1950. *Imbriglia, Joseph E., 934 Cedar Grove, Wynnewood, Pa. (19096)
1949. Ingraham, Norman R., Jr., Stenton and Whitemarsh Aves. (18)
1957. Isaacson, Howard, Haverford Ave. & Drexel Rd. (19151)
1951. *Isard, Harold J., Albert Einstein Medical Center, York & Tabor Rds. (19141)
1951. *Israel, Harold L., 302 S. 19th St. (19103)
1947. *Israel, S. Leon, 807 Spruce St. (7)
1967. Jacoby, Jay J., 1025 Walnut St. (19107)
1967. Jaeger, Edward A., Media Clinic, Media, Pa. (19063)
1947. Jaeger, Rudolph, Jefferson Bldg., 1015 Chestnut St. (7)
1966. Jannett, Andrew F., Packard St., Hammonton, N. J.
1965. Jenkins, B. Wheeler, 1526 E. Upsal St. (19150)
1960. Jenson, William K., Pennsylvania Hospital (19107)
1943. *Johnson, Julian, 3400 Spruce St. (4)
1959. Johnson, Robert G., 1015 Walnut St. (7)
1938. Johnson, Thomas A., 135 S. 18th St. (3)

---

* S. Weir Mitchell Associate.

1963. Jones, Robert E., 111 N. 49th (39)
1967. Jones, W. Mead, Somerset House, Fort Washington, Pa. (19034)
1963. Joseph, Rosaline R., 3401 N. Broad St. (40)
1966. Joyce, John J., III, 5908 Greene St. (19144)
1961. Joyner, Claude R., Jr., 3400 Spruce St. (4)
1957. Kachfr, Leon, 2037 Pine St. (3)
1957. Kane, Sydney H., 3458 Cottman Ave. (49)
1948. Kaplan, Louis, 2040 Pine St. (3)
1964. *Kaplan, S. Richard, 419 S. 19th St. (19146)
1938. Kasper, Kelvin A., 135 S. 18th St. (3)
1966. Kassay, Dezso, 1 Summit St. (19118)
1958. Kasser, Max D., 101 S. 20th St. (19103)
1945. Katz, G. Henry, 111 N. 49th St. (39)
1941. Kauffman, M. Luther, Medical Arts Bldg., Jenkintown, Pa.
1947. Kay, Calvin Frederick, Univ. of Pa. Hospital (4)
1954. Kaye, Robert, Children's Hospital, 1740 Bainbridge St. (46)
1968. Keates, Edwin U., 2385 Cheltenham Ave. (19150)
1947. Keefer, George Pfahler, 136 S. 16th St. (2)
1963. Keeley, Francis X., Professional Bldg., 1533 Haddon Ave., Camden, N. J.
1966. Keeney, Arthur H., Wills Eye Hospital (19130)
1949. Keiserman, Joseph, 1900 John F. Kennedy Blvd. (19103)
1959. Keitel, Hans G., USV Pharmaceutical Corp., 800 Second Ave., NYC (10017)
1965. Kellow, William F. T., 1025 Walnut St. (19107)
1932. *Kelly, Herbert T., 1830 Delancy Place (19103)
1961. Kelly, William E., 111 N. 49th St. (39)
1965. Kennedy, Charles, 1740 Bainbridge St. (19146)
1941. Kennedy, Patrick J., 32 Hampden Rd., Upper Darby, Pa.
1948. Kern, Franklin Moore, 903 Nicholson Rd., Wynnewood, Pa.
1921. *Kern, Richard A., Temple University Hospital, 3401 N. Broad St. (40)
1935. Keyes, Baldwin L., 2031 Locust St. (3)
1936. King, Orville C., 330 S. 9th St. (7)
1952. Kirschner, Jacob J., 1930 Chestnut St. (3)
1960. Kitchell, J. Roderick, Abington Hospital Medical Office Bldg., 1245 Highland Ave., Abington, Pa. (19001)
1920. Klein, Thomas, 191 Apts., Bala-Cynwyd, Pa. (19004)
1954. Kligman, Albert M., 36th & Spruce Sts. (4)
1934. Kline, Oram R., 896 Lake Ave., Woodbury Hts., N. J. (08097)
1959. Kline, Oram R., Jr., 406 Cooper St., Camden, N. J. (08102)
1948. Klingensmith, Paul O., Med. Science Bldg., Lankenau Hosp. (19151)
1958. Klingensmith, Walter C., 3600 Spruce St. (4)
1956. Klinghoffer, June F., Woman's Medical College (29)
1960. Knope, Carl L., 5312 Spruce St. (39)
1960. Knorr, John K., 3rd Langenau Medical Bldg. (19151)
1959. Knowles, Harry J., 255 S. 17th St. (3)
1945. Kobler, H. B., School Lane House, 5450 Wissahickon Ave. (19144)
1959. Koiwai, Eichi Karl, 235 N. 15th St. (2)
1957. Koltes, John A., 530 Spring Lane (19128)
1936. Konzelmann, Frank Williamson, 27 W. Wilmont Ave., Somers Point, N. J. (08244)
1949. *Koop, C. Everett, 1740 Bainbridge St. (46)
1964. Koppel, Max M., 7310 Castor Ave. (19115)
1952. Kornblueh, Igho H., Welsh Rd. & Verree Rd. (15)
1958. Kovach, Coleman W., 1830 Rittenhouse Sq. (19103)
1941. Krall, J. Thomas, 85 N. Lansdowne Ave., Lansdowne, Pa.
1948. Kramer, David W., 2007 Pine St. (3)
1954. *Krasnoff, Sidney, O., Tabor Medical Bldg., York & Tabor Roads (41)
1952. Kravitz, Charles H., 626 Ashbourne Rd., Elkins Park, Pa.

---

* S. Weir Mitchell Associate.

1964. Kremens, Victor, 5601 N. Broad St. (19141)
1949. Kressler, Robert J., 330 S. 9th St. (7)
1941. Krewson, William E., 3rd, 1930 Chestnut St. (3)
1947. Kuhlenbeck, Hartwig, Woman's Medical College, 3300 Henry Ave. (29)
1964. Kustrup, John F., 1418 S. Broad St., Trenton, N. J.
1967. Kyle, George C., 3400 Spruce St. (19104)
1947. La Boccetta, Alfred Charles, Philadelphia General Hospital, 34th St. & Curie Ave. (4)
1952. *Lachman, John W., 3401 N. Broad St. (40)
1950. Lamont, Auston, 3400 Spruce St. (4)
1946. Lampe, William T., 4207 Tyson Ave. (35)
1962. Landis, Harry P., Jr., 901 Columbia Ave., Palmyra, N. J.
1952. *Lang, Warren R., 1025 Walnut St. (19107)
1966. Langfitt, Thomas W., Pennsylvania Hospital (19107)
1941. Langner, Paul H., Jr., 1208 Edmonds Ave., Drexel Hill, Pa.
1945. Lansbury, John, 3414 Brae Bourn Drive, Huntingon Valley, Pa. (19006)
1926. Laws, George M., 1907 Spruce St. (3)
1967. Lear, Walter J., Phila. General Hosp. (19104)
1950. Learner, Norman, 3701 N. Broad St. (40)
1920. Leavitt, Frederic Headley, 1527 Pine St. (2)
1941. Leberman, Paul R., Hospital of the University of Pennsylvania (4)
1957. Lee, Charles Trumbull, Jr., 33 E. Chestnut Hill Ave. (18)
1952. *Lehman, J. Stauffer, 230 N. Broad St. (2)
1961. Leibfried, Jane M., 5501 Green St. (44)
1951. Leivy, Frank E., Wm. Penn House, 1919 Chestnut St. (19103)
1944. Lell, William A., 333 S. 18th St. (3)
1935. Lemmon, William T., 133 S. 36th St. (4)
1965. Leopold, Howard C., 4623 York Rd. (19104)
1955. Leopold, Robert L., Univ. of Pa. Hosp. (19104)
1967. Leslie, W. Munroe, 8800 Germantown Ave. (19118)
1944. Lettiere, Anthony J., 425 E. State St., Trenton, N. J.
1965. Levenson, Carl, 619 Elkins Ave. (19117)
1933. Levering, J. Walter, Beaver Hill Apts., Jenkintown, Pa. (19046)
1959. Levick, Leonard J., 1300 E. Cliveden St. (19)
1958. Levine, Samuel, 7100 N. 19th St. (26)
1964. Levit, Edithe J., 3930 Chestnut St. (19104)
1964. Leit, Samuel M., 1910 Spruce St. (19103)
1958. LeWinn, Edward B., Upper Black Eddy, Pa. (18972)
1960. *Lewis, George C., Jr., 230 N. Broad St. (2)
1967. Lewis, Stuart H., 2050 W. Chester Ave., Havertown, Pa. (19083)
1964. Leymaster, Glen R., Woman's Medical College, 3300 Henry Ave. (19129)
1967. Liachowitz, Claire H., Graduate Hospital (19146)
1955. Lieberman, George E., 269 S. 19th St. (19103)
1956. Likoff, William, 249 N. Broad St. (2)
1962. Lilley, George W., Scott Paper Co. (19113)
1940. Limberger, William A., 301 S. Church St., West Chester, Pa.
1958. Lin, David Y. P., 2222 S. Broad St. (45)
1966. Lin, Paul M., The Benson, Suite 123, Jenkintown, Pa. (19046)
1938. Lindauer, M. August, 133 S. 36th St. (4)
1956. Linquist, John N., 422 Sabine Ave., Wynnewood, Pa.
1927. Lindsey, Walter H., 102 Park Drive, Highland Park, Doylestown, Pa.
1936. Lintgen, Charles, 1930 Chestnut St. (3)
1958. Lipshutz, Arthur, 7974 Fayette St. (19)
1959. *Lipshutz, Herbert, 807 Spruce St. (19107)
1953. Lipsius, Edward I., 319 S. 16th St. (3)
1959. Little, Ralph B., 111 N. 49th. (39)
1944. Livesey, Mary M., 8835 Germantown Ave. (19118)

* S. Weir Mitchell Associate.

1936. Llewellyn, Thomas H., 910 N. 63rd St. (19151)
1907. Lodholz, Edward, The Fairfax, 43rd & Locust Sts. (4)
1933. Long, Esmond R., Society Hill Towers, 23B, 220 Locust St. (19106)
1951. Long, Joseph P., 1930 Chestnut St. (3)
1935. Long, William L., 2038 Locust St. (3)
1931. Longaker, Edwin P., 41 E. Montgomery Ave., Ardmore, Pa.
1951. Lohber, Stanley H., Temple Univ. Hospital, 3401 N. Broad St. (19140)
1961. Lorry, Ralph W., 1247 E. Luzerne St. (24)
1960. Lovett, B. Frank, North Park Drive & Airport Highway, Pennsauken, N. J. (08109)
1963. Lubowitz, Richard M., Benson East Apts., Jenkintown, Pa.
1936. Lucchesi, Pascal Francis, 601 E. Gorgas Lane (19)
1967. Luce, Cyril M., 37 S. 20th St. (19103)
1960. Lucine, Albert A., 345 S. 19th St. (3)
1939. Luongo, Romeo A., 2054 Locust St. (3)
1951. Lusombe, Herbert A., 136 S. 16th St. (2)
1952. Lutman, Frank C., 100 W. Coulter St. (44)
1919. Lynch, Frank B., Jr., 809 Cambridge Apts., School House Lane (44)
1950. Lynch, J. Edward, Suite 305, Wynnewood House, 300 E. Lancaster Ave., Wynnewood, Pa.
1953. Lyons, John W., 255 S. 17th St. (3)
1965. McCabe, James L., Jr., Barclay Bldg., One Belmont Ave., Bala-Cynwyd, Pa.
1932. *McCahey, James F., Wesley Manor, Jacksonville, Fla. (32223)
1958. *McClenahan, John L., 39 East Chestnut Hill Ave. (18)
1935. McClenahan, William U., 33 East Chestnut Hill Ave., Chestnut Hill (18)
1957. McConnell, Edward L., Jr., 2342 S. Broad St. (45)
1934. McCouch, Grayson P., Univ. of Pa. School of Medicine (4)
1962. McCracken, Stewart, 3701 N. Broad St. (40)
1938. McCrea, Lowrain, E., 1930 Chestnut St. (3)
1958. McCune, Wallace G., 5555 Wissahickon Ave. (44)
1942. McDonald, P. Robb, Langenau Medical Bldg. (19151)
1953. McDonnell, William V., West Jersey Hospital, Camden 4, N. J.
1952. McElroy, Robert C., 133 S. 36th St. (4)
1950. McFadden, William M., 1187 E. Washington Lane (19138)
1949. McGavic, John S., 601 Montgomery Ave., Bryn Mawr, Pa.
1945. McGee, Lemuel Clyde, Hercules Powder Company, Wilmington, Del.
1954. McGehee, Edward H., 33 E. Chestnut Hill Ave. (18)
1952. McGlade, Thomas H., 719 Cooper St., Camden, N. J. (08102)
1966. McGowan, Larry, Fitzgerald Mercy Hospital, Darby, Pa. (19023)
1956. McGrath, Raymond, J., 1720 Spruce St. (3)
1959. McKeown, John J., Jr., 255 S. 17th St. (19103)
1933. McLaughlin, James S., 330 S. 9th St. (19107)
1966. McMichael, Harrison, 524 Meadowbrook Circle, Wayne, Pa. (19087)
1924. McMillan, Thomas M., 2451 Mt. Island Drive, North, Mobile, Ala. (36606)
1924. McPhedran, F. Maurice, Copc House, Awbury, Arboretum (19138)
1955. McStravog, Lawrence J., 6910 Market St., Upper Darby, Pa.
1954. MacFadyen, Bruce V., 1819 Pennsinvania Blvd. (3)
1932. *Macfarlane, Catherine, 136 S. 16th St. (2)
1964. Macht, Elmer L., Jr., York & Keith Roads, Abington, Pa.
1949. MacNeal, Perry Scott, Suite 308, Franklin Medical Bldg., 829 Spruce St. (19107)
1951. MacNeish, W. J., 821 Great Springs Rd., Rosemont, Pa. (19010)
1955. Macy, Dorothy, 705 Beechwood Road, Media, Pa.
1957. Madow, Leo, Woman's Medical College, 3300 Henry Ave. (19129)
1935. Maeder, LeRoy, M. A., 1910 Rittenhouse Sq. (3)
1967. Magee, Joseph H., Jefferson Medical College (19107)
1966. Maguire, Henry C., Jr., Hahnemann Medical College & Hosp. (19102)
1952. Mahoney, J. Francis, 250 S. 18th St. (3)

---

* S. Weir Mitchell Associate.

1965. MANCALL, ELLIOTT L., 230 N. Broad St. (19102)
1959. MANDEL, MARTIN M., Benson Manor, Township Line & Washington Lane, Jenkintown, Pa.
1966. MANGES, W. BOSLEY, 255 S. 17 St. (19103)
1954. MANGES, WILLIS E., Methodist Hospital, Broad & Wolf Sts. (48)
1949. MANLOVE, FRANCIS R., 500 Williamson Rd., Gladwyne, Pa.
1960. MANNING, VALENTINE R., 3336 Aldine St. (36)
1956. MANSTEIN, GEORGE, 1351 Tabor Rd. (41)
1961. MAPOW, ABRAHAM B., 535 Pine St. (6)
1953. MARBACH, A. HERBERT, 1307 Tabor Rd. (41)
1948. MARDEN, PHILIP AYER, University Hospital, 36th & Spruce Sts. (4)
1958. MARINO, DANIEL J., 422 East 22nd St., Chester, Pa.
1966. MARKIND, SIMON, Pennsylvania Hospital (19107)
1950. MARSHALL, E. WAYNE, 907 Pine St. (19107)
1968. MARTIN, JOHN H., 3401 N. Broad St. (19140)
1951. *MARTIN, WILLIAM L., 402 Holly Lane, Wynnewood, Pa. (19096)
1953. MARX, HALVEY E., 76 Brennan Drive, Bryn Mawr, Pa.
1966. MASTROIANNI, LUIGI, JR., University Hospital (19104)
1939. MAL, HANS, 244 S. 17th St. (3)
1951. MAYOCK, ROBERT L., 3600 Spruce St. (4)
1958. MAYS, RALPH WHITEMAN, 154 W. Tulpehocken St. (44)
1961. MECHANICK, PHILIP, Univ. of Pa. Hosp. (19104)
1952. MECRAY, PAUL, JR., 405 Cooper St., Camden, N. J. (08102)
1951. MEDINGER, FREDERICK G., 1941 Woodland Road, Abington, Pa.
1959. MEDOFF, JOSEPH, 5400 Wynnefield Ave. (31)
1941. MENDELL, THEODORE H., 2023 Spruce St. (3)
1943. MERANZE, DAVID R., 229 W. Upsal St. (19119)
1954. MERTENS-ROESLER, ELIZABETH, 2910 Woodpipe Lane (29)
1956. MERVES, LOUIS, 1015 Chestnut St. (7)
1955. MERVINE, THOMAS B., Medical Arts Bldg., Woodbury, N. J. (08096)
1959. METZGER, HARRY N., 1815 Pine St. (3)
1964. MEYER, EDWARD C., Fitzgerald Mercy Hospital, Darby, Pa. (19023)
1955. MEYER, EUGENE A., 1438 Mt. Ephraim Ave., Camden, N. J.
1964. MICHAILE, KENNETH L., 1930 Chestnut St. (19103)
1956. MILLER, BERNARD JOSEPH, 6013 Greene St. (44)
1935. MILLER, FORD A., 4016 Chestnut St. (4)
1939. MILLER, MALCOLM W., Lankenau Medical Bldg. (19151)
1939. *MILLER, MERLE M., 6013 Greene St. (44)
1921. MILLER, T. GRIER, 133 S. 36th St. (4)
1955. MILLER, WILLIAM H., Fitzgerald Mercy Hospital, Darby, Pa.
1952. MINEHART, JOHN R., 615 E. Allegheny Ave. (19134)
1952. *MINTZ, S. S., 1930 Chestnut St. (3)
1963. MISHKIN, MARK M., Univ. of Pa. Hospital (19104)
1950. MITCHELL, JOHN MCK., 6 Bryn Mawr Ave., Bryn Mawr, Pa. (19010)
1952. MITCHELL, ROBERT MCNAIR, 807 Spruce St. (7)
1959. MITTERLING, ROBERT C., Chestnut St. & Glendale Rd., Upper Darby, Pa.
1967. MONHEIT, RICHARD S., Albert Einstein Medical Center, N.D. (19141)
1936. MONTGOMERY, HUGH, 119 Glenn Road, Ardmore, Pa.
1936. *MONTGOMERY, JOHN B., 1930 Chestnut St. (3)
1932. MONTGOMERY, THADDEUS L., 2031 Locust St. (3)
1935. *MOORE, JOHN ROYAL, 3401 N. Broad St. (40)
1947. MOORE, MATTHEW THIBAUD, 1813 Delancey Pl. (3)
1958. MOORE, SAMUEL R., JR., 1600 Arch St. (1)
1958. MORAN, ALMA D., 3665 Midvale Ave. (29)
1936. MORGAN, DAVID R., 218 W. Mt. Carmel Ave., Glenside, Pa.
1944. MORRIS, HAROLD H., St. Clair Drive, St. Simons Island, Georgia (31522)

* S. Weir Mitchell Associate.

1945. Morris, I. Paul, 1939 Cheltenham Ave. (17)
1965. Morse, Dryden P., 245 N. Broad St. (19107)
1967. Moss, N. Henry, 5579 N. Park Ave. (19141)
1964. Most, William, 994 Haddon Ave, Collingswood 7, N. J.
1959. Moyer, John H., 230 N. Broad St. (2)
1941. *Mucklé, Craig Wright, 8016 Seminole Ave. (19118)
1929. Mudd, Stuart, V. A. Hosp. (19104)
1960. Mulberger, Robert D., 1930 Chestnut St. (3)
1965. Muller, Otto, Fitzgerald-Mercy Hospital, Darby, Pa.
1930. Murphy, Douglas P., 601 S. Bowman Ave., Merion Station, Pa.
1953. Murphy, Edward J., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1958. Murphy, John J., 3600 Spruce St. (4)
1959. Murray, Edwin N., 130 N. Broadway, Camden, N. J.
1955. Murtagh, Frederick ,Jr., 3401 N. Broad St. (40)
1951. Myers, David, 3701 N. Broad St. (40)
1965. Myers, Richard N., 307 Langenau Medical Bldg. (19151)
1955. Nachod, Grace R., 5501 Greene St. (44)
1968. Naden, Randall S., Jr., 130 N. Broadway, Camden, N.J. (08102)
1968. Nagle, Frank O., Jr., 37 S. 20th St. (19103)
1945. Naide, Meyer, 2034 Spruce St. (3)
1951. Naidoff, David, 3500 Tudor St. (36)
1966. Nance, Maurice R., 1500 Spring Garden St. (19101)
1950. Nardone, Anthony A., 912 S. 49th St. (43)
1959. Neal, Hunter, S., 460 Langenau Medical Bldg. (19151)
1958. Nealon, Thomas F., Jr., 1025 Walnut St. (7)
1948. Neese, Paul H., 17 Derwen Road, Cynwyd, Pa.
1963. Nelson, Arthur D., 3400 N. Broad St. (40)
1943. Nelson, Waldo E., 615 Moreno Rd., Narberth, Pa.
1955. *Nemir, Paul, Jr., 19th & Lombard Sts. (19146)
1935. *Nicholson, Jesse Thompson, 1740 Bainbridge St. (19146)
1960. Nicholson, John W., III, 115 Chestnut St., Moorestown, N. J.
1947. Noone, Ernest L., R. D. #1, Elverson, Chester Co., Pa. (19520)
1954. Norris, Charles M., 3401 N. Broad St. (40)
1938. *Norris, Robert F., 513 Wynnewood Ave., Wynnewood, Pa.
1957. Oakey, Richard S., Jr., 309 Medical Bldg., Lankenau Hospital (51)
1963. O'Hara, A. Edward, Jefferson Medical College Hospital (19107)
1954. Olsen, Axel K., The Windsor Apts. (19103)
1949. O'Neill, James F., 1425 Woodland Rd., Rydal, Pa. (19046)
1954. O'Neill, Thomas J. E., Centennial Bldg., Front St. & Lehigh Ave. (25)
1947. Ornsteen, A. M., 2007 Delancey Pl. (3)
1955. Ottenberg, Donald J., Eagleville Hosp., Eagleville, Pa. (19408)
1961. Owen, Barbara J., Bryn Mawr Hospital, Bryn Mawr, Pa. (19010)
1949. *Padis, Nicholas, Lankenau Medical Bldg. (51)
1968. Padula, Richard T., 1025 Walnut St. (19107)
1909. Parish, Benjamin Dores, Cresheim Arms Hotel, Allens Lane & Bryan St. (19)
1963. Parish, Benjamin D., Jr., 1261 Bethlehem Pike, Flourtown, Pa. (19031)
1945. Park, Felix, Roman, 1980 Utica Sq., Tulsa, Okla. (74114)
1940. Parker, Alan P., Bryn Mawr Medical Bldg., Bryn Mawr, Pa. (19010)
1948. Parkhurst, Leonard Woods, 330 S. 9th St. (7)
1952. Paxson, Newlin F., 245 N. Broad St. (7)
1932. Payne, Franklin L., Univ. of Pa. Hospital (4)
1965. Pearlstine, Beatrice, 7404 Mountain Ave. (19126)
1954. Pearce, Alexander E., 1420 Race St. (2)
1958. Pearce, Rowan C., Jr., 327 Cooper St., Camden 2, N. J.
1943. Pearson, Gerald H. J., Presidential Apts.—Adams House (31)
1954. Pearson, Manuel M., 111 N. 49th St. (39)

---

* S. Weir Mitchell Associate.

1967. Pechin, Sergius P., 1910 Garrett Rd., Lansdowne, Pa. (19050)
1960. Peltz, William L., 111 N. 49th St. (39)
1930. *Pendergrass, Eugene P., Radiology Dept., University Hospital, 3400 Spruce St. (19104)
1953. Penneys, Raymond, University of Pennsylvania Hospital (4)
1964. Perrin, George M., First Floor Mills Bldg., Philadelphia General Hospital, 34th & Curie Ave. (19104)
1940. Pessl, Johannes F., 224 West State St., Trenton, N. J. (08608)
1952. Peters, Michael, Fairhill Rd., Hatfield, Pa. (19440)
1961. Peterson, Lysle H., Bockus Research Institute, 19th & Lombard Sts. (19146)
1940. Pettit, Horace, 601 Suburban Sq. Bldg., Ardmore, Pa. (19003)
1949. *Pettit, Mary DeWitt, 3343 W. Penn St. (29)
1946. Pfeiffer, Mildred C. J., 358 Valley Rd., Merion, Pa. (19066)
1935. Phillips, Arthur W., 3904 Walnut St. (19104)
1961. Phillips, William A., Eastern Pennsylvania Psychiatric Institute (19129)
1948. Pierson, Daniel B., Jr., 740 Beacon Lane, Merion, Pa. (19066)
1964. Pierucci, Louis, Jr., 1025 Walnut St. (19107)
1961. Pike, Anne H., 5603 Greene St. (19144)
1957. *Pilling, George Platt, IV, 2600 N. Lawrence St. (19133)
1933. *Pillsbury, Donald M., Duhring Labs., University Hospital (19104)
1957. Platt, Ruth M., 441 Lyceum Ave. (28)
1951. Poinsard, Paul J., 2031 Locust St. (3)
1968. Polin, Edward B., 7810 Old York Rd. (19117)
1937. Polk, David Stewart, Rosemont, Pa.
1967. Polk, Lewis D., 500 S. Broad St. (19146)
1956. *Pontarelli, Domenic J., 1037 Great Springs Rd., Rosemont, Pa.
1953. Porreca, George A., 1912 Spruce St. (19103)
1932. Porter, Roland De Lance, Abington Medical Bldg., Abington, Pa.
1951. Post, Joseph W., 105 Glenview Ave., Wyncote, Pa. (19095)
1951. Pote, Harry H., 103 E. Ridley Ave., Ridley Park, Pa.
1958. Potter, H. Phelps, Jr., Woman's Medical College (19129)
1951. *Pressman, Robert S., 170 W. Olney Ave. (19120)
1965. Price, Joseph J., 36 Copley Road, Upper Darby, Pa.
1947. Prickett, John A., Warrington, Bucks County, Pa.
1954. Prince, Leon N., 2025 Spruce St. (3)
1931. Pryor, Charles Allen, 734 S. Latch's Lane, Merion Station, Pa. (19066)
1952. Pugh, James E., 614 Church Lane, Yeadon, Pa.
1968. Qualls, Donald M., Lankenau Medical Bldg. (19151)
1943. *Radbill, Samuel X, 7043 Elmwood Ave. (42)
1953. Radbill, Sidney G., Wm. Penn House, 1919 Chestnut St. (19103)
1966. Raffensperger, Bruce W., 8811 Germantown Ave. (19118)
1953. Raffensperger, Edward C., 260 St. James Place (6)
1945. Rakoff, Abraham Edward, Franklin Medical Bldg., 829 Spruce St. (19107)
1953. Ralston, Edgar L., 3400 Spruce St. (4)
1931. Ramsey, Frank M., 620 E. Willow Grove Ave. (18)
1953. Ranieri, Tito A., 2320 S. Broad St. (45)
1941. Rankin, Charles A., Ludlow & Heather Rd., Upper Darby, Pa.
1951. *Rathmell, Thomas K., 446 Bellevue Ave., Trenton, N. J.
1926. *Ravdin, I. S., Univ. of Pa. Hospital (4)
1956. Ravdin, Robert Glenn, 3400 Spruce St. (4)
1959. Raventos, Antolin, 3400 Spruce St. (4)
1962. Raymond, F. Douglas, Jr., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1964. Raymond, Samuel, 711 Maloney Bldg., University Hospital, 36th & Spruce Sts. (19104)
1961. Read, William T., Jr., 110 Munn Lane, Cherry Hill, N. J. (08034)
1954. *Reagon, Linldey B., 166 Madison Ave., Mt. Holly, N. J. (08060)
1965. Reddy, John B., 1025 Walnut St. (19107)
1960. Reed, Theodore P., Lankenau Medical Bldg. (19151)

---

* S. Weir Mitchell Associate.

1928. Reese, Warren S., 2118 Locust St. (3)
1919. Reimann, Stanley P., 703 W. Phil-Ellena St. (19)
1964. Reinhard, John J., Jr., 335 Woodstown Road, Salem, N. J.
1956. Reishtein, William A., 16 Bancoyd Rd., Merion Station, Pa.
1963. Reisinger, Paul B., 855 Berkeley Ave., Trenton, N. J.
1951. Rentschler, Laurence B., 5800 Ridge Ave. (28)
1968. Rex, Eugene B., Lankenau Medical Bldg. (19151)
1945. *Rhoads, Jonathan E., Univ. of Pa. Hospital (4)
1946. Rhoads, Rebecca M. P., Alden Park, Kenilworth 303 (19144)
1964. Rhoads, S. Creadick, Alden Park, Kenilworth 303 (19144)
1963. Rial, William Y., 111 Dartmouth Ave., Swarthmore, Pa.
1942. Riggs, Helena E., 150 Hewitt Rd., Wyncote, Pa.
1936. Ritter, Joseph A., 1034 Bryn Mawr Ave., Narberth, Pa.
1932. Robbins, Frederick R., 317 Milbank Rd., Bryn Mawr, Pa.
1952. Robbins, Robert, 3401 N. Broad St. (40)
1954. *Roberts, Brooke, 3400 Spruce St. (4)
1957. Roberts, Joan Mary, 4 W. Mt. Pleasant Ave. (19)
1968. Roberts, John M., 5555 Wissahickon Ave. (19144)
1964. Robinson, James H., 5900 Spruce St. (19139)
1960. Roeders, Paul H., 330 S. 9th St. (7)
1955. *Rogers, Fred B., 3401 N. Broad St. (40)
1951. *Ronis, Bernard J., 2106 Spruce St. (3)
1948. Roscoe, Constantine R., 7226 Castor Ave. (24)
1928. Rose, Edward, 426 Owen Rd., Wynnewood, Pa.
1936. Rose, Elizabeth Kirk, 426 Owen Rd., Wynnewood, Pa.
1959. Rose, Isadore, 6000 W. Oxford St. (19151)
1965. Rosenberg, Hyman, 1555 Haddon Ave., Camden, N. J.
1966. Rosenberg, Morton, 1025 Walnut St. (19107)
1946. *Rosemond, George Parrott, 3401 N. Broad St. (40)
1960. Rosenow, Edward C., Jr., American College of Physicians, 4200 Pine St. (4)
1948. Rothman, Maurice M., 1727 Spruce St. (3)
1951. Rouse, George P., Jr., 250 South 18th St. (2)
1966. Roner, Harold, 1427 Spruce St. (19102)
1965. Rowe, Daniel S., 20 Horseshoe Lane, Madison, Conn. (06443)
1952. Roxby, Bruce S., 5501 Greene St. (44)
1955. Roxby, John B., Jr., 4821 Germantown Ave. (44)
1949. Royster, Henry P., 3400 Spruce St. (4)
1959. Rubin, Alan, 255 S. 17th St. (3)
1952. Rubin, I. Edward, 255 S. 17th St. (3)
1933. Rudolphy, Jay Besson, 312 S. County Line Rd., Wayne, Pa. (19087)
1966. Rugart, Karl F., 811 Spruce St. (19107)
1946. Rupp, Charles, 133 S. 36th St. (4)
1947. Rush, Alexander, 330 S. 9th St. (7)
1963. Rutter, William A., 425 Wister Rd., Wynnewood, Pa.
1963. Ryan, James J., 301 E. City Line, Bala-Cynwyd, Pa.
1945. Rynes, Samuel E., 334 S. 21st St. (3)
1965. Sachs, Marvin L., 133 S. 36th St. (19104)
1952. Sain, Fletcher D., 1245 Highland Ave., Abington, Pa. (19001)
1958. Sall, Manuel, 255 S. 17th St. (3)
1952. Salner, Nathan P., 6812 Castor Ave. (24)
1952. Saltzman, Maurice, 2037 Spruce St. (3)
1966. Samitz, M. H., 1715 Pine St. (19103)
1944. Sampson, David Alan, 726 Braeburn Lane, Penn Valley, Narberth, Pa.
1964. Santangelo, Samuel C., 1941 Woodland Road, Abington, Pa.
1950. Sarner, Joseph B., 289 Locust St. (19106)
1967. Sattilaro, Anthony J., Methodist Hospital (19148)

* S. Weir Mitchell Associate.

1954. SAVACOOL, J. WOODROW, 146 W. Tulpehocken St. (44)
1947. SAŸEN, JOHN J., 3600 Spruce St. (4)
1948. SCARANO, JOSEPH ALBERT, 1432 S. Broad St. (19146)
1917. *SCHAEFFR, J. PARSONS, 4634 Spruce St. (19139)
1929. *SCHEFFEY, LEWIS C., 601 Walnut Lane, Haverford, Pa. (19041)
1942. *SCHEIE, HAROLD G., 3400 Spruce St. (19104)
1929. SCHENCK, HARRY P., 1235 Wyngate Rd., Wynnewood, Pa.
1966. SCHLESS, GUY L., 330 South Ninth St. (19107)
1945. SCHLEZINGER, NATHAN S., 255 S. 17th St. (3)
1961. SCHLOSSER, WOODROW D., 3701 N. Broad St. (40)
1917. SCHNABEL, TRUMAN G., 509 Williams Road, Wynnewood, Pa. (19096)
1958. SCHNABEL, TRUMAN G., JR., Phila. General Hospital (19104)
1957. SCHNALL, NATHAN, 2037 Pine St. (3)
1962. SCHNEIDER, HENRY C., 4801 Penn St. (24)
1966. SCHOENBERG, HARRY W., 3400 Spruce St. (19104)
1968. SCHOTZ, SEYMOUR, 51 N. 39th St. (19104)
1955. SCHREDER, CHARLES J., 318 W. Godfrey Ave. (20)
1952. SCHULZ, NORBERT J., 1901 Walnut St. (3)
1963. SCHUMACHER, L. RICHARD, 60 E. Court St., Doylestown, Pa.
1950. SCHUMANN, FRANCIS, 8811 Germantown Ave. (18)
1948. SCHWARZ, GABRIEL A., 133 S. 36th St. (4)
1962. SCHWARZ, HENRY P., Philadelphia General Hospital (4)
1955. SCHWEGMAN, CLETUS W., Hospital of the University of Penna. (4)
1966. SCOTT, J. CLIFFORD, 826 Maple Ave., Berwyn, Pa.
1930. SCOTT, JOHN PORTER, Children's Hospital, 1740 Bainbridge St. (46)
1950. SCOTT, MICHAEL, 3401 N. Broad St. (40)
1940. SCOTT, T. F. MCNAIR, Children's Hospital, 1740 Bainbridge St. (46)
1952. SEIFER, ARTHUR F., 710 South Main St., Phoenixville, Pa.
1958. SELLERS, ALFRED M., Hosp. of the Univ. of Pa. (4)
1952. SEMISCH, CHARLES W., III, 1344 Gilbert Rd., Meadowbrook, Pa.
1967. SEYLER, RAYMOND Q., 1600 Arch St. (19101)
1966. SHAFFER, HORACE M., 208 W. State St., Trenton, N. J. (08608)
1960. *SHANNON, GERARD M., 8118 Bustleton Ave. (15)
1950. SHARP, REUBEN L., 719 Cooper St., Camden, N. J.
1963. SHARPLES, WYNNE, 454 S. Ithan Ave., Villanova, Pa. (19085)
1928. SHARPLESS, FREDERICK C., 621 Railroad Ave., Haverford, Pa.
1956. SHAW, DANIEL L., JR., 702 Knox Rd., Villanova, Pa.
1963. *SHEARBURN, EDWIN W., 306 Lankenau Medical Bldg. (19151)
1955. SCHECHTER, FRED R., 2461 No. 54th St. (31)
1954. SHELLY, WALTER B., 36th & Spruce Sts. (4)
1955. SHENKIN, HENRY A., Episcopal Hospital (25)
1946. SHEPHERD, SAMUEL GARFIELD, 1900 Spruce St. (19103)
1968. SHERK, HENRY H., 330 S. Ninth St. (19107)
1956. SHERSON, JACOB S., 405 Meadow Lane, Merion Station, Pa. (19066)
1964. SHIMKIN, MICHAEL B., Temple University School of Medicine (19140)
1936. SHIPMAN, JAMES SHELBY, 514 Cooper St., Camden, N. J. (08102)
1958. SHIPPS, HAMMELL P., 719 Cooper St., Camden, N. J. (2)
1957. SHOPE, EDWARD PIERCE LENTZ, 807 Wilson Bldg., Camden, N. J.
1946. SHOUP, GEORGE DANIEL, 121 W. Walnut Lane (44)
1955. *SHUBIN, HARRY, 6601 N. 21st St. (38)
1952. SHUMAN, CHARLES R., 3401 N. Broad St. (40)
1949. SIDLICK, DAVID M., Park Towne Place E., 2200 Benj. Franklin Pkwy. (19130)
1941. *SILCOX, LOUIS E., Lankenau Medical Bldg. (19151)
1956. *SILLARS, CHARLES H., Abington Memorial Hospital, Abington, Pa.
1963. SILVERMAN, DANIEL, 269 South 19th St. (19103)
1955. SILVERSTEIN, ALEXANDER, 2114 Pine St. (3)

* S. Weir Mitchell Associate.

1967. Simenhoff, Michael L., 1025 Walnut St. (19107)
1966. Simkins, Samuel, 515 W. Godfrey Ave. (19126)
1961. Simmons, Vaughan P., The Fidelity Mutual Life Insurance Co. (1)
1954. Singmaster, Lawrence, 272 Cheswold Lane, Haverford, Pa.
1952. Skromak, Stanley J., 5108 Torresdale Ave. (24)
1967. Sloane, Norman G., 255 S. 17th St. (19103)
1929. Smith, Austin T., 330 S. 9th St. (7)
1964. Smith, Edgar C., 7100 Marshall Road, Upper Darby, Pa.
1955. Smith, J. Winslow, 3034 Darby Rd., Ardmore, Pa.
1967. Smith, Kaighn, Lankenau Medical Bldg. (19151)
1933. Smith, Lauren Howe, 111 N. 49th St. (39)
1952. Smith, Richard T., 330 S. 49th St. (7)
1967. Smith, Robert R., William H. Rorer, Inc., 500 Virginia Drive, Fort Washington, Pa. (19034)
1964. Smyth, Murray G., Jr., 1710 Delancey Place (19103)
1951. Snape, William J., 573 Stevens St., Camden, N. J.
1966. Snow, Laurence H., 3300 Henry Ave. (19129)
1953. Snyder, G. Gordon, Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1958. Sodeman, William A., 1030 E. Lancaster Ave., Rosemont, Pa. (19010)
1961. Soffe, Alvin M., 1930 Chestnut St. (3)
1935. Sokoloff, Martin J., 255 S. 17th St. (3)
1964. Soll, David B., 5001 Frankford Ave. (19124)
1940. Soloff, Louis A., 3401 N. Broad St. (40)
1950. Somerville, William J., 37 S. 20th St. (3)
1944. Sommer, George N. J., Jr., 120 W. State St., Trenton, N. J.
1952. Sones, Maurice, Mt. Airy Medical Bldg. (19)
1951. Sonneborn, Duane G., 1200 W. Erie Ave. (24)
1928. *Spaeth, Edmund B., 1930 Chestnut St. (3)
1966. Spaeth, George L., 1930 Chestnut St. (19103)
1958. Spaeth, Philip G., 1930 Chestnut St. (3)
1937. Spangler, John Luther, Devon, Pa.
1957. Spelman, Joseph Worcester, Dept. of Public Health, 13th & Wood Sts. (7)
1935. Spiegel, Ernest A., 6807 Lawnton Ave. (26)
1961. *Spiegelman, Jay, Benson East Apt., Jenkintown, Pa.
1955. Spitz, Eugene B., 40–50 W. Front St., Media, Pa.
1958. Splendido, Joseph A., 608 W. Cliveden (19)
1961. Stahlgren, LeRoy H., Episcopal Hospital, Front & Lehigh Ave. (19125)
1960. Stainback, William C., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1957. Stanley, Robert C. G., 2315 Edgemont Rd., Chester, Pa.
1968. Stapinski, Stanley M., 80 W. Main St., Glen Lyon, Pa. (18617)
1927. Starr, Isaac, 505 Cresheim Valley Rd. (18)
1952. Stauffer, Herbert M., 3401 N. Broad St. (40)
1952. Stayman, Joseph W., Jr., 8815 Germantown Ave. (18)
1945. Stecher, H. Armin, 1510 Darby Rd., Havertown, Pa.
1955. Steel, Howard H., 238 W. Allens Lane (19119)
1952. *Steiger, William A., 3401 N. Broad St. (40)
1964. Stein, Donald B., Jr., Fitzgerald Mercy Hospital, Darby, Pa.
1946. Stein, Irvin, 1936 Spruce St. (3)
1966. Stein, Joseph M., 414 Cooper St., Camden, N. J. (08102)
1953. Stein, Raymond O., 269 S. 19th St. (3)
1966. Stein, Samuel C., 1930 Chestnut St. (19103)
1936. Steinfield, Edward. 2200 Benjamin Franklin Parkway (30)
1951. Sterling, Julian A., 3505 S. Ocean Drive, Hollywood, Fla. (33020)
1948. Stevens, Lloyd W., 133 S. 36th St. (4)
1928. *Stokes, Joseph, Jr., Henry Phipps Institute, 4219 Chester Ave. (19104)
1943. Stokes, S. Emlen, 129 Chester Ave., Moorestown, N. J.

---

* S. Weir Mitchell Associate.

1967. Stool, Sylvan E., 1740 Bainbridge St. (19146)
1968. Storey, Patrick B., 1505 Race St. (19102)
1961. Strang, John E., 330 S. 9th St. (7)
1953. Strawbridge, Rendall R., Lankenau Medical Bldg. (19151)
1937. *Strumia, Max M., Penn Valley, Narberth, Pa.
1960. *Strumia, Paul V., Bryn Mawr Hospital, Bryn Mawr, Pa.
1967. Stunkard, Albert J., Univ. of Pennsylvania (19104)
1951. *Sturgis, Katharine Boucot, Woman's Medical College, Henry Ave. & Abbottsford Road (19129)
1927. Sturgis, Samuel Booth, 349 Wistar Rd., Wynnewood, Pa.
1930. Sunderman, F. William, 1833 Delancey Place (3)
1966. Sullivan, Howard E., Jr., Bryn Mawr Medical Bldg., Bryn Mawr, Pa. (19010)
1954. *Sussman, Marcel S., Wm. Penn House, 1919 Chestnut St. (19103)
1963. Sutliff, Frederick P., 3701 N. Broad St. (19140)
1965. Sutnick, Alton I., 2135 St. James Place (19103)
1965. Swartley, Robert N., 8815 Germantown Ave. (19118)
1952. Talbot, Timothy R., Jr., 204 Booth Lane, Haverford, Pa.
1963. Tassman, William S., 626 Four Penn Center Plaza, 16th & J. F. Kennedy Blvd. (19103)
1946. Tauber, Robert, 2019 Walnut St. (3)
1952. Taylor, Ann Gray, 6364 Germantown Ave. (44)
1960. Taylor, Daniel B., 2241 Federal St. (46)
1965. Taylor, Richard C., 11th & Sansom Sts. (19107)
1956. Templeton, John Y., III, 1025 Walnut St. (19107)
1966. Teplick, Joseph G., 1351 W. Tabor Road (19141)
1966. Terry, Luther L., 121 College Hall, Univ. of Pennsylvania (19104)
1951. Theodos, Peter A., 1930 Chestnut St. (3)
1961. Therman, Per-Olof, 111 N. 49th St. (39)
1959. Thomas, Arthur H., 5240 Vine St. (39)
1946. Thomas, Carmen C., 1930 Chestnut St. (3)
1964. Thomas, John W., 5900 Spruce St. (19139)
1952. Thompson, Charles M., 255 S. 17th St. (3)
1927. Thorington, J. Monroe, Cambridge Apts., Wissahickon Ave. & School House Lane (44)
1967. Thorwarth, William T., 8835 Germantown Ave. (19118)
1954. Tindall, Dorohy D., 1930 Rittenhouse Sq. (3)
1966. Toland, Joseph J., III, 3273 Teesdale St. (19136)
1935. Toland, Owen J., 336 Aubrey Rd., Wynnewood, Pa.
1952. *Tondreau, Roderick L., 523 Old Gulph Rd., Bryn Mawr, Pa.
1949. Tornay, Anthony S., 2038 Locust St. (3)
1966. Torrance, Edward G., 678 Burmont Rd., Drexel Hill, Pa.
1936. Towson, Charles Emory, 224 W. Washington Lane (44)
1955. Trimpi, Howard D., 501 N. 17th St., Allentown, Pa.
1954. Trommer, Philip R., 258 S. 18th St. (3)
1956. Troncelliti, Mario V., Pennsylvania Hospital (7)
1953. Tropea, Frank, Jr., 500 Mulberry Lane, Haverford, Pa.
1947. Trueman, Robert H., 2101 Chestnut St. (3)
1954. Truitt, R. Marshall, Jr., 6400 Wissahickon Ave. (19119)
1965. Tsaltas, Theodore T., 1025 Walnut St. (19107)
1966. Tucker, Gabriel F., Jr., 3401 N. Broad St. (19140)
1959. Tuddenham, William J., Pennsylvania Hospital (7)
1938. Tuft, Louis, 1530 Locust St. (2)
1964. Tulsky, Emanuel G., Abington Memorial Hospital, Abington, Pa. (19001)
1933. *Tumen, Henry J., 1830 Rittenhouse Square (3)
1938. Turman, Christopher M., 1245 Highland Ave., Abington, Pa. (19001)
1923. Turner, Creighton H., 1731 Pine St. (3)
1954. Turner, Linton W., 16 Bay Rd., Ocean City, N. J. (08226)
1959. Tyson, R. Robert, 3401 N. Broad St. (40)

---

* S. Weir Mitchell Associate.

1937. *Uhle, Charles A. W., Lankenau Medical Bldg. (19151)
1953. Ulin, Alexander W., 230 N. Broad St. (2)
1960. Uricchio, Joseph F., 245 N. Broad St. (7)
1950. Valdes-Dapena, Antonio, 214 Plush Mill Rd., Wallingford, Pa.
1958. Van den Noort, Gordon S., 888 Glenbrook Ave., Bryn Mawr, Pa.
1937. *Vander Veer, Joseph B., 330 S. 9th St. (7)
1937. Van Loon, Emily Lois, 255 S. 17th St. (3)
1960. Van Meter, Ralph H., 244 W. Main St., Moorestown, N. J.
1933. *Vastine, Jacob H., 2nd, 267 Kent Rd., Wynnewood, Pa.
1967. Vaughan, Victor C., III, 2600 N. Lawrence St. (19133)
1963. Vaughan, Arthur R., Jr., 5329 Rising Sun Ave. (19120)
1958. Velkoff, Cyril L., 2100 Walnut St. (3)
1965. Viggiano, Louis X., 301 Long Lane, Upper Darby, Pa.
1952. Vischer, Thomas J., 5903 Greene St. (44)
1940. Voegelin, Adrian W., Germantown Professional Bldg. (44)
1960. Wagenheim, Harry H., 1822 Spruce St. (3)
1949. Wagner, Frederick B., Jr., 800 Chauncey Road, Narberth, Pa.
1949. Wagner, Joseph A., 201 Highland Ave., Bryn Mawr, Pa.
1938. Waldman, Joseph, 404 Meadowbrook Lane (18)
1955. Waldron, Jerome M., Evergreen Towers, 8900 Roosevelt Blvd. (19115)
1967. Waltzer, Frederick N., York & Keith Rds., Abington, Pa. (19001)
1956. Watkins, E. Lloyd, 8811 Germantown Ave. (18)
1967. Wear, Roland F., Jr., Campbell Soup Co., 375 Memorial Ave., Camden, N.J. (08101)
1952. Weaver, Harry S., Jr., Room 405, 1930 Chestnut St. (19103)
1953. Weber, Lennard L., 829 Spruce St. (19107)
1952. Weinstein, George L., 255 S. 17th St. (3)
1950. Weiss, Sidney, 2037 Locust St. (3)
1965. Weiss, William, Philadelphia General Hospital, 34th & Curie Ave. (19104)
1959. Wellenbach, Burton L., 1930 Chestnut St. (19103)
1967. Weller, Russell W., Memorial Hosp. of Chester County, W. Chester, Pa. (19380)
1951. *Welty, Jack W., Montgomery Ave. & Owen Rd., Wynnewood, Pa.
1955. Wendkos, Martin H., Green Hill in Lower Merion (19151)
1962. Wentz, Clarkson, 20 S. Valley Road, Paoli, Pa.
1961. Wermuth, William C., 414 Minden Way, Wynnewood, Pa. (19096)
1959. West, Clifton F., Jr., 406 Lankenau Medical Bldg. (19151)
1921. Whitaker, William, 4645 Oakland St. (24)
1965. White, Joseph C., Barrow Neurological Institute of St. Joseph's Hospital, 302 Thomas Rd., Phoenix, Arizona (85013)
1960. Whiteley, William H., 1015 Chestnut St. (7)
1925. Widmann, Bernard P., 250 S. 18th St. (3)
1954. Wiedfr, Henry S., Jr., 829 Spruce St. (19107)
1939. *Willauer, George, 6129 Greene St. (44)
1937. *Williams, John C., 6370 Germantown Ave. (44)
1965. Williams, Kirkley R., Bryn Mawr Medical Bldg., Bryn Mawr, Pa. (19010)
1920. Williams, Philip F., 410 Mayflower Rd., Lake Forest, Ill. (60045)
1950. Williams, R. G., Univ. of Pa. School of Medicine (4)
1927. Williamson, Ernest G., 6353 Woodbine Ave. (19151)
1945. Wilson, John F., Fairmount Farm, 561 Fairthorne Ave. (19128)
1949. Wilson, William W., 133 S. 36th St. (4)
1957. Winkleman, N. William, Jr., 4141 Apalogen Rd. (44)
1963. Winston, Joseph M., Jeanes Hospital (11)
1966. Wise, John S., 433 Bellevue Ave., Trenton, N. J. (08618)
1961. Wise, Robert I., 1025 Walnut St. (7)
1968. Witkowski, Joseph A., 3501 Ryan Ave. (19136)
1953. Wohl, George T., Philadelphia General Hospital (4)
1933. Wohl, Michael G., 1727 Pine St. (3)

---

* S. Weir Mitchell Associate.

1958. Woldow, Irving, Einstein Med. Center, York & Tabor Rds. (19141)
1958. Wolf, John H., 124 W. Walnut Lane (44)
1944. Wolf, Lewis R., 3474 Frankford Ave. (34)
1962. Wolferth, Charles C., Jr., The Windsor, Suite 2307, 1700 Benj. Franklin Pkwy. (19103)
1964. Wolfson, Robert J., 3701 N. Broad St. (19140)
1964. *Wolgin, William, 1512 Spruce St. (19102)
1957. Wolkowicz, Michael I., 2022 Spruce St. (3)
1942. Wolman, Irving J., 7607 Woodlawn Ave. (26)
1966. Wood, Alfred C., Jr., 6386 Church Rd. (19151)
1932. *Wood, Francis C., 3400 Spruce St. (19104)
1944. Wood, H. Curtis, Jr., 7010 Lafayette Ave., Fort Washington, Pa.
1966. Wood, Margaret G., 3400 Spruce St. (19104)
1953. *Woodruff, Marston T., 4940 Penn St. (24)
1960. Wurzel, Harold A., 3400 Spruce St. (4)
1966. Yaskin, H. Edward, 589 Stevens St., Camden, N. J. (08103)
1964. Young, Alma L., 3343 W. Penn St. (19129)
1941. *Young, Barton R., Germantown Hospital (44)
1966. Young, Irving, Albert Einstein Medical Center, N.D. (19141)
1967. Zakreski, Matthew J., 8815 Germantown Ave. (19118)
1961. Zanni, Anthony L., 111 N. 49th St. (39)
1957. Zaslow, Jerry, 6735 Harbison Ave. (19149)
1955. Zatuchini, Jacob, 3401 N. Broad St. (40)
1946. Zeigerman, Joseph H., 2105 Spruce St. (3)
1949. Zintl, William J., 1016 Warrior Rd., Drexel Hill, Pa. (19026)
1956. Ziserman, Abraham J., 2046 Pine St. (3)
1962. Zubrow, Sidney N., 829 Spruce St. (19107)
1933. Zulick, J. Donald, 307 Fisher Rd., Jenkintown, Pa. (19046)
1965. Zweiman, Burton, Univ. of Pa. Hospital (19104)

Non-Resident Fellows

ELECTED

1936. Alexander, Fay K., Lincolnville, Maine
1953. Allman, David B., 4105 Brigantine Blvd., Brigantine, N. J. (08203)
1941.**Aronson, Ronald S., 9401 Byeforde Road, Kensington, Md. (20795)
1954. Austin, George M., University of Oregon Medical School, Portland, Oregon
1942. Bachman, Carl, 1337 Andrea Ave., St. Helena, Cal. (94574)
1958. Ballinger, Walter F., II, Washington Univ. Sch. of Med., 4960 Audubon Ave., St. Louis, Mo. (63110)
1966. Baue, Arthur E., The Jewish Hosp. of St. Louis, 216 S. Kingshighway, St. Louis, Mo. (63110)
1955. Beckfield, William J., Luther Hospital, 310 Chestnut St., Eau Claire, Wisconsin
1949. *Beecham, Clayton T., Geisinger Medical Center, Danville, Pa.
1932. Behnel, Charles A., P. O. Box 4256, San Jose Branch, Bisbee, Arizona.
1955. Blank, Harvey, Jackson Memorial Hospital, Miami 36, Fla.
1921. Borzell, Francis F., R. D. 2, Box 2051, Browns Mills, N. J.
1937. Braceland, Francis J., The Institute of Living, 200 Retreat Ave., Hartford, Conn.
1951. Brinton, S. Jervis, 3 Gulf View Rd., Palm Beach, Fla. (33482)
1948.**Brown, Robert B., MC, USN, U. S. Naval Hospital, Bethesda, Md.
1959. Brownellier, Ellsworth R., Geisinger Medical Center, Danville, Pa.
1953. Burbridge, J. Raymond, 163 Nassau St., Princeton, N. J.
1952. Bumgardner, Heath D., 13 S. Main St., Cape May Court House, N. J.
1931. Cantarow, Abraham, Dept. of Health, Education & Welfare, NIH, Bethesda, Md. (20014)

---

* S. Weir Mitchell Associate.
** Military Service.

1948. Chapman, John P., Calle Fray Junipero Serra 26, Palma de Mallorca, Balearic Islands, Spain
1950. Chapple, Charles C., 8517 Indian Hills Drive, Omaha, Neb. (68114)
1941. Cheleden, John, 1012 Volusia Ave., Daytona Beach, Fla.
1930. Clarke, Francis Mann, 116 New St., New Brunswick, N. J.
1926. Clerf, Louis H., 5575-8th Ave., North St. Petersburg, Fla.
1964. Cohen, Sheldon G., 309 S. Franklin St., Wilkes-Barre, Pa.
1959.**Cowan, RADM. John S., MC, USN, Pacific Fleet Surgeon, Hdq., U.S. Pacific Fleet, FPO, San Francisco, Calif. (96601)
1960. Cowley, Allen W., Sr., 1919 N. Front St., Harrisburg, Pa.
1947. Cutler, Norman L., 1300 Harrison St., Wilmington, Del.
1941.**Cuttle, Tracy D., U. S. Naval Hospital, Chelsea, Mass. (02150)
1959. Dannenberg, Arthur M., Jr., Johns Hopkins School of Hygiene, 615 N. Wolfe St., Baltimore, Md. (21205)
1955. Daugherty, J. Arthur, 1511 N. Front St., Harrisburg, Pa.
1937. Davis, Perk Lee, Pennhurst, Berwyn, Pa. (19475)
1954. Deitrick, John E., Cornell Univ. Medical College, 1300 York Ave., New York 21, N. Y.
1941. Dixon, Harold M., 4805 46th St., N.W., Washington 16, D. C.
1961. Duane, Thomas D., 35 E. Elizabeth Ave., Bethlehem, Pa.
1959. Durgin, Bernice Elise, 221 N. Allegheny St., Bellefont, Pa.
1947. Durkin, John K., V.A. Hospital, Coatesville, Pa. (19320)
1964. Eckenhoff, James E., Northwestern Univ. Medical School, Chicago, Ill. (60611)
1955. Edwards, Margaret Hay, 800 4th St., S.W., Washington 24, D. C.
1953. Eisenberg, Isadore J., 2806 Green St., Harrisburg, Pa.
1951. Ellis, Mackinnon, Mountain Home V.A. Hosp., Johnson City, Tenn. (37601)
1957.**Errion, Arthur Robbins, U. S. Naval Hospital, Fleet Post Office, San Francisco, Cal. (96662)
1951. Ervin, Carl E., 240 North Third Street, Harrisburg, Pa.
1944. Estes, W. L., Jr., 35 E. Elizabeth Ave., Bethlehem, Pa.
1954. Evans, Harry D., Jr., American Cyanamid Co., 1 Caspar St., Danbury, Conn.
1952. Faller, Constantine P., 127 State St., Harrisburg, Pa.
1952. Flinn, Lewis B., 1306 Broom St., Wilmington 6, Del.
1940. Forrester, James S., Harrisburg Polyclinic Hospital, Harrisburg, Pa.
1940. Fry, Kenneth E., Clinton Court Apts., Walla Walla, Washington (99362)
1947. Gaskill, Herbert S., 9648 E. Powers Drive, Englewood, Colo.
1957. Giering, John Fleming, 84 James St., Kingston, Pa.
1931. Gilman, Robert Louis, Cheyney, Pa.
1968. Glenney, Wilton R., 218 W. Market St., Pottsville, Pa. (17901)
1954. Godfrey, Ellwood W., Princeton Hospital, Princeton, N. J.
1928. Gordon, Burgess L., 1550 Lake Shore Dr., Chicago, Illinois
1952. Grieco, Reynold M., 2 W. 4th St., Williamsport, Pa.
1934. Griffith, John Q., Jr., 6 North Fredericksburg Ave., Margate, N. J.
1952. Gross, Elmer R., Medical Arts Bldg., Wilmington, Del.
1933. Gruber, Charles M., 1313 College Ave., Redlands, Calif.
1951. Hafkenschiel, Joseph H., Jr., 418 Palm St., Palo Alto, Calif. (94301)
1935. Haines, Harlan F., 231 N. Pine St., Seaford, Del.
1939. Hamblock, Leonard C., Masonic Homes, Elizabethtown, Pa. (17022)
1959. Hampton, Louis J., 300 Highland Ave., Hanover, Pa. (17331)
1955. Harris, John H., 1301-A N, Second St., Harrisburg, Pa.
1965. Harris, John H., Jr., Carlisle Hospital, Carlisle, Pa. (17013)
1932. Harris, Stanley E., 229 Maple Ave., Delanco, N. J.
1936. Hatch, Lerleen Clement, 1642 Saddle Hill Drive, Logan, Utah
1928. Hayman, Joseph M., Jr., 3504 E. Scarborough Rd., Cleveland Hts., Ohio (44118)
1946. Hendrickson, Frank O., Jupiter, Fla.
1955. Hills, Arthur G., 1000 N. W. 17th St., Miami, Fla. (36)

---

* S. Weir Mitchell Associate.
** Military Service.

1933. Hitzrot, Lewis H., 161 Patton Ave., Princeton, N. J. (08540)
1910. Horn, Robert C., Henry Ford Hospital, Detroit, Mich.
1953. Imber, Irving, 428 Walnut St., Reading, Pa.
1958. Impink, Robert R., 405 Oley St., Reading, Pa.
1935. Ingleby, Helen, The Church House, Heacham, King's Lynn, England
1921. *Ivy, Robert H., 104 Dalton Rd., Paoli, Pa.
1952. Jonas, Karl C., 916 19th St., N.W., Washington, D.C. (20006)
1955. *Jordan, Charlotte B., 175 E. Brown St., E. Stroudsburg, Pa.
1955. Jordan, Claus G., 175 E. Brown St., E. Stroudsburg, Pa.
1936. Kain, Thomas M., 30 Northeast 97th St., Miami, Fla.
1956. Keffer, William H., 413 Oley St., Reading, Pa.
1947. Kelchner, Clyde H., 1125 Turner St., Allentown, Pa.
1954. LaMotte, William O., Jr., 1303 Delaware Ave., Wilmington, Del. (19806)
1963. Lang, Leonard P., 1009 Park Place, Wilmington, Del. (19806)
1936. Leaman, William G., Jr., P. O. Box 463, Unionville, Pa. (19375)
1943. Leopold, Irving H., The Mount Sinai Hospital, 100th St. & 5th Ave., New York, N. Y. (10029)
1952. Levan, John B., 401 Oley St., Reading, Pa.
1960. Lewis, David H., Hogenskildsgatan 13, Göteborg Ö, Sweden
1949. Lhamon, William T., The New York Hospital, 525 E. 68th St., New York, N. Y. (10021)
1954. Light, John J. B., 25 N. 9th St., Lebanon, Pa.
1954. Lindenmuth, Woodrow W., V. A. Hospital, West Haven, Conn.
1948. Livingood, Clarence S., Henry Ford Hospital, Detroit 2, Mich.
1932. *Lukens, Francis D. W., Veterans Administration Hospital, University Drive, Pittsburgh, Pa. (15240)
1965. McCarty, Daniel J., Jr., University of Chicago, Chicago, Ill. (60637)
1962. McGregor, Robert A., The Professional Bldg., Augustine Cut-Off, Wilmington 3, Del.
1948. McLaughlin, John T., 655 N. Central Ave., Glendale, Calif.
1942. Manges, Lewis C., Jr., Reed Memorial Hospital, Hancock, N. Y.
1959. Maniglia, Rosario, Holy Spirit Hospital, Camp Hill, Pa.
1953. Margolies, Michael, 567 E. Chestnut St., Coatesville, Pa.
1955. Margolies, M. Price, 379 E. Chestnut St., Coatesville, Pa.
1935. Mason, James B., 1730 S. Jackson St., Tacima, Washington
1932. Meade, Richard H., Jr., 750 San Jose Dr., Grand Rapids, Mich.
1936. Middleton, William Shainline, 2114 Adams St., Madison, Wisc.
1946. Miller, Franklin R., Snyder-Jones Clinic, First Nat. Bk. Bldg., Winfield, Kansas
1949. Motley, Hurley L., 1212 Shatto St., Los Angeles, Calif.
1949. *Mulholland, Stanford W., P.O. Box 338, Christiansted, St. Croix, Virgin Islands (00820)
1960. Ojers, Gaylord W., 35 E. Elizabeth Ave., Bethlehem, Pa.
1956. Oppenheimer, Albert, 224 E. Main St., Moorestown, N. J.
1926. Paul, John Rodman, 333 Cedar St., New Haven, Conn.
1959. Pendergrass, Henry P., Massachusetts General Hospital, Boston, Mass.
1950. Pincus, Irwin J., 610 N. Roxbury Drive, Beverly Hills, Calif.
1958. Rachlin, Lillian, 370 Golden Oak Drive, Portola Valley, Calif. (94026)
1966. Rahn, Elsa Kertesz, 363 Hempstead Ave., Rockville Center, N. Y. (11570)
1938. Read, Hilton S., 5407 Atlantic Ave., Atlantic City, N. J.
1964. Reed, Miriam, 253 Witherspoon St., Princeton, N. J.
1958. Reinhardt, David J., III, 1303 Delaware Ave., Wilmington, Del.
1936. Reisinger, John A., 1835 Eye St., N.W., Washington, D. C.
1955. Rettew, Philip L., 612 Museum Rd., Reading, Pa.
1951. Richardson, Fred MacD., Bureau of Medical Review, 84 Holland Ave., Albany, N. Y. (12208)
1961. Richardson, Herschel E., 205 Mayerline St., Houston, Texas
1947. Rogers, Arthur Merriam, 1351 Durwood Drive, Charlotte, N. C.
1941. Royster, Hubert A., Jr., Watts Hospital, Durham, N. C. (27705)

* S. Weir Mitchell Associate.

1954. Sampson, Martin C., Wallace Laboratories, Cranbury, N. J.
1936. Sands, Joseph Evans, 135 107th St., Stone Harbor, N. J.
1945. Schell, James F., 506 Sharpley Lane, Wilmington, Del.
1958. Schreck, Kenneth M., 1403 Dauphin Ave., Wyomissing, Pa. (19610)
1921. Schumann, Edward A., 4141 Jackson Drive, Lafayette Hill, Pa.
1951. Seitchik, Joseph, Sinai Hospital of Baltimore, Baltimore, Md.
1941. Shands, Alfred R., Jr., Alfred I. duPont Institute, P.O. Box 269, Wilmington, Del. (19899)
1964. Sharpe, William D., New Jersey College of Medicine, Jersey City 4, N. J.
1950. Shiffer, Paul H., Dreher Ave., R.D. #2, Stroudsburg, Pa.
1951. Shorey, Winston K., 7117 Shamrock Drive, Little Rock, Arkansas
1933. Smelzer, Donald C., 207 E. Orange St., Lancaster, Pa.
1954. Smith, Charles W., 128 State St., Harrisburg, Pa.
1942. Stengel, Alfred, Jr., Maple Ave., Katonah, N. Y.
1955. Stevenson, Theodore D., 475 Riverside Drive, New York, N. Y. (10027)
1931. Stiles, Merritt H., E. 406 14th Ave., Spokane 3, Wash.
1953. Stroud, M. W., Shaker Blvd., Shagrin Falls, Ohio (44022)
1934. Summey, Thomas J., Morrowdale Farm, Rt. 2, Charlottesville, Va.
1961. Sunderman, F. William, Jr., University of Florida College of Medicine, Gainesville, Fla. (32603)
1952. Sweeney, Frances X., Station A, Marlboro, N. J. (07746)
1931. Taylor, Norman H., Queen of the East, E. Broadway, Hamilton, Bermuda
1928. Thomas, J. Earl, Loma Linda University, Loma Linda, Calif.
1942. Thompson, Wesley D., 247 E. 3rd St., Lewistown, Pa.
1941. Tompkins, Pendleton, 490 Post St., San Francisco, Calif.
1897. Veasey, Clarence A., 1118 W. 9th Ave., Spokane 9, Wash.
1941. Weaver, Ruth H., 108 Atlantic Ave., Atlantic City, N. J.
1957. Webster, Marie, 1623 Hyde St., San Francisco 9, California
1966. Wentzler, J. Donald, R.D. #2, Muncy, Pa. (17756)
1959. Whayne, Tom F., University of Kentucky Medical Center, Lexington, Ky.
1966. White, Richard K., 1702 Walnut St., Allentown, Pa. (18104)
1936. Wilder, Theodore S., Linden Lane, Sherborn, Mass.
1935. Willard, John H., Harlan Memorial Hospital, Harlan, Kentucky
1949. Willson, J. Robert, University of Michigan Medical Center, Ann Arbor, Michigan (48104)
1948. Winston, Julius, 1616 Pacific Ave., Atlantic City, N. J. (08400)
1963. Wood, Horatio C., IV, Cincinnati General Hospital, Cincinnati, Ohio
1953. Zarafonetis, Chris J. D., Simpson Memorial Institute, University of Michigan, Ann Arbor, Michigan

Honorary Fellows

Limited to fifty, of whom twenty may be foreigners.

American

ELECTED

1967. Bell, Whitfield J., Jr., ph.d., litt.d(hon.), ll.d.(hon.), American Philosophical Society, Independence Square (19106)
1964. Corner, George Washington, m.d., sc.d.(hon.), ll.d.(hon.), litt.d.(hon.), 1810 Rittenhouse Square (3)
1959. Fay, Marion S., m.a., ph.d., sc.d.(hon.), ll.d.(hon.), Women's Medical College, Henry Ave. & Abbottsford Rd. (29)
1965. Gurin, Samuel, ph.d., sc.d.(hon.), University of Pennsylvania School of Medicine, 36th and Hamilton Walk (19104)
1958. *Shryock, Richard H., ph.d., ll.d.(hon.), American Philosophical Society, Independence Square (6)

* S. Weir Mitchell Associate.

FOREIGN

1937. DALE, SIR HENRY HALLET, C.B.E., F.R.S., O.M., M.D., F.R.C.P., 52 Queen Anne St., London, W. 1, England

1955. MANN, IDA, M.A., D.SC., M.B., B.S., L.R.C.P., D.O.M.S., F.R.C.S., Ophthalmic Consultant to the Government of W. Australia, 56 Hobbs St., Nedlands, Perth, W. Australia.

Honorary Associate Fellows

1955. DIEMAND, JOHN A., President, Insurance Company of North America, 1600 Arch St. (2)

1964. PEW, J. HOWARD, Grays Lane & Mill Creek Rd., Ardmore, Pa.

1967. ROSENWALD, LESSING, J., 1146 Fox Chase Rd., Jenkintown, Pa. (19046)

1967. WINTERSTEEN, MRS. JOHN, 1425 Mt. Pleasant Rd., Villanova, Pa. (19085)

Necrological List

Resident Fellows	*Date of Election*	*Date of Death*
CARISS, WALTER L.	May 11, 1931	June 5, 1967
CHOUKÉ, KEHAR S.	April 2, 1947	October 29, 1967
CORSON, EDWARD F.	November 4, 1914	December 2, 1967
CORSON-WHITE, ELLEN P.	October 7, 1936	July 1962
EHRICH, WILLIAM E.	January 11, 1944	December 25, 1967
ERSNER, MATTHEW S.	January 4, 1950	January 16, 1968
EVANS, WILLIAM W.	January 6, 1954	April 1, 1967
FETTER, JOHN S.	October 3, 1945	August 26, 1967
GRANT, FRANCIS C.	January 11, 1926	November 20, 1967
LEWIS, FIELDING O.	October 6, 1915	May 9, 1965
LONDON, RUSSELL I.	March 6, 1963	March 19, 1967
MEYER, GEORGE P.	May 10, 1937	May 6, 1966
PECK, ROY I.	February 6, 1952	October 9, 1967
PERKINS, WILLIAM H.	March 4, 1942	October 22, 1967
THUDIUM, WILLIAM J.	January 6, 1936	March 6, 1967
WRIGHT, CARROLL S.	May 7, 1928	December 5, 1967

Non-Resident Fellows	*Date of Election*	*Date of Death*
BATES, WILLIAM	May 11, 1931	February 22, 1967
COTTRELL, JAMES E.	May 12, 1930	July 16, 1967
GATES, NATHANIEL	October 1, 1913	August 30, 1967
SMYTH, CALVIN M.	January 10, 1927	June 18, 1967
SPONSLER, MARSHALL B.	January 7, 1929	July 6, 1967
STEWART, SLOAN G.	January 8. 1934	September 18, 1967

(*Suggested Form of Bequest*)

I hereby give, devise, and bequeath to The College of Physicians of Philadelphia, a charitable and educational association organized under the laws of the Commonwealth of Pennsylvania and the executive offices whereof are located in the City of Philadelphia, the sum of. . . . . .

a. which sum shall be used for the general purposes of said association;

b. which sum shall be added to and become a part of the general endowment fund of said association;

c. which sum shall be used by said association preferably for the following purposes:

Index to Volume 35
1967–68

Abrahams, H. J., 96
Air pollution, 144
Alcohol, gout and, 53
Alpers, B. J., 235*, 237*
Anatomy, Art, 89
Anders lecture, W. H. Steward, 26; symposium, 144
Anniversary, 180th, reception, 133
Apostolate, medical mission, 1
Appel award, E. M. Heiman, 37
Art Anatomy, Dr. Willian Rimmer and, 89
Arthritis, gouty, 47
Asphyxia, memoir on types of, 96
Atkins, J. P., 237
Austrian, R., 236

Bach lecture, G. P. Rodnan, 47
Ballard, R. W., 236*
Barden, R. P., 235*
Barnshaw, H. D., Sr., 77
Bastille, J., 236*
Beardwood, J. L., Jr., 198
Beem, J. R., 236*
Beerman, Herman, 235*
Beeson, R. A., 236*
Behrend, A., 236*
Blades, H. W., 236*
Blumstein, G. I., 234*, 235*, 235*
Bongiovanni, A. M., 234*
Bower, R. J., 236*
Boyer, F., 236*
Brooke, J. A., memoir of, 203
Brooks, F. P., 237*
Brosky, C., 236*
Bryant, F. D., 236*
Bucher, R. M., 236*
Burney, L. E., 144, 234*, 236*

Cancer, pain control in, 171
Cantwell, N. H. R., 236*
Carson, M. S., 63
Caswell, H. T., 235*
Clagett, H., Jr., 235*
Clark, J. K., 235*, 236*, 236*, 236*
Clark, J. E., 237*
Coates, Benjamin Hornor, 63
Coates, Reynell, 112
Coates, Samuel, 64
Cogan, D. G., de Schweinitz lecture, 233
Cohn, H. E., 235*
Collections, College, annual report, 229
College of Physicians of Philadelphia, 69; Adm staff, 238; Collections (ann. rep.), 229 Committees, 234; Fellows, 239; Lectures (1967), 231; Library (ann. rep.), 212; Mutter Museum (ann. rep.) 229; Officers, 234; President's address (Wood), 204; Sectetary's report, 206; Sections (officers), 237; (programs), 232; Treasurer's report, 208
Colonna, P. C., memoir of, 41
Cooke, L. F., 236*
Coon, J. M., 236*
Cooper, D. A., 234*, 235*
Correspondence, Minor, 185
Coste, Doctor Jean Francois, 96
Cottrell, J. E., Memoir of, 201
Crosley, A. P., Jr., 235*
Crossan, E. T., memoir of, 198

Davis, C. N., 236*
Davis, J. W., 236*
Deaver, J. M., 200, 237*
Deibert, I. E., memoir of, 77
Dengel, Mother Anna, 1, 3
Diamond, R. Y., 236*
Dietrich, H. J., Jr., 237*
Di Palma, J., 236*
Donaldson, J. B., 235*
Draeger, I. J., 236*
Duffield, Dr. Samuel, 119
Durant, T. M., 234*, 236*, 236*
Dyer, W. W., 236*

Eckman, J. W., 236*
Eiman, J. W., 236*
Electrical stimulation, pain control, 171
Elkinton, J. R., 235*
Elliott, F. A., 235*, 237*
Elsom, K. A., treasurer's report, 208; 234*, 236
Erslev, A. J., 236*, 237*
Evans, Dr. Cadwalader, 30
Experience, therapeutic, 37

Farrar, G. E., Jr., 235*
Fast, gout and, 52
Fay, M., 236*
Finances Is Fun, 191
Fitts, W. T., Jr., 234*
Forum, community health, 144
Franklin, Benjamin, friend of, 30
Frayer, W. C., 237*

* Refers to the list of College officers, committees, sections and administrative staff.

French, G. H., 235*, 235*, 237*
Friedman, P. S., 236*
Frobese, A. S., 235*
Funk, E. H., Jr., 236*

Garrison, S., 236*
Gefter, W. I., 235*
Gershon-Cohen, J., 234*
Gianakon, H. G., 237*
Gibbon, J. H., Jr., 234*, 235*, 235*, 236*, 236*, 237*
Gibson, G. G., 237*
Gill, R. J., 235*, 237*, 237*
Goals, social, in public health, 26
Gottlieb, P. M., 237*
Gout, 47; post-operative, 57; drug-induced hyperuricemia, 59
Grotzinger, P. J., 235*, 236*

Hahn, G. A., 234*; secretary's report, 206
Harkins, H. P., 237*
Harrell, G. T., 236*
Health, public, social goals, 26
Heath, F. K., 236*
Heller, A. N., 144
Heiman, E. M., 37
Hilferty, D. J., Jr., 234*
Hinman, E. H., 234*
Hitschler, W. J., 237*
Hodes, P. J., 235*
Hollander, J. L., 237*
Holling, H. E., 235*
Holloway, E. E., 235*
Horan, J. J., 236*
Horwitz, O., 237*
Hospitals, early Christian, 5
Houser, K. M., memoir of, 126
Huber, J. F., 236*, 237*

Invitation, to gout, 47

Jones, H., therapeutic experience of, 37
Jones, R. E., 235*, 235*, 237*, 238*

Kauffman, M. L., 237*
Kellow, W. F., 234*, 236*
Kern, R. A., 234*, 235*, 237*, 237*
Klein, R. S., 30, 119
Klingensmith, P. O., 234*
Kolodziejski, T. J., 238*
Kostenbauder, H. B., 236*

Lake, H., 236*
Lambertsen, C. J., 236*
Lang, O. E., 238*
Lansbury, J., 237*
Larson, Gordon, 144
Lasagna, L., 236*
Lawrason, F. D., 236*
Learner, N., 237*
Leavitt, F. H., 129
Lectures, College, list of, 231
Lehman, J. S., 235*
Lentz, R. T., 236*
Lessons on pain control, 171
Levit, E. J., 235*
Leymaster, G. R., 235*, 236*
Library, annual report, 212; committee, 234
Likoff, W., 237*
Lilley, G. W., 235*
Long, E. R., 234*

Macfarlan, Douglas, memoir of, 129
Mancall, E. L., 237*
Manuscripts, Benjamin Coates, 63
Marden, P. A., 237*
Martin, W. L., 203
Mc Clenahan, J. L., 234*
Mc Clenahan, W. U., 74
Mc Cune, W. G., 235*
Mc Daniel, W. B., 2d, curator's report, 220; 238*
Mc Donald, P. R., 235*, 237*
Mc Laren, Dr. Agnes, 10
Mc Ney, H. W., 236*
Mead lecture, Sister M. R. Polcino, 1
Medical Mission Sisters, 1
Memoirs
  Brooke, J. A., 203
  Colonna, P. C., 37
  Cottrell, J. E., 201
  Crossan, E. T., 198
  Deibert, I. E., 77
  Houser, K. M., 126
  Macfarlan, Douglas, 129
  Pfeiffer, D. B., 200
  Richardson, Russell, 44
  Robertson, H. F., 131
  Stone, R. S.
  Ullom, J. T., 74
Memoir sur les différents genres d'asphyxica, 96
Miller, M. M., 133, 235*, 236*, 237*
Miller, T. G., 234*, 235*, 235*, 237*
Mission, Medical Sisters, 1
Missions, historical evolution; protestant, 1; catholic, 4
Minor, *James*, 185
Mitchell, S. W., quotation, 171; oration, 171; Associates, 190
Moore, J. R., Strittmatter award, 206, 231
Moore, S. R., 238*
Morse, D. P., 235*
Morse, E. H., library report, 221; 236*; 238*
Moyer, J. H., 236*, 237*
Munns, W. A., 236*
Mütter Museum, photograph, 71; report, 229

Nance, M. R., 236*
Neurological, Philadelphia Society, 81
Nealon, T. F., Jr., 234*
Nemir, P., Jr., 235*
Nicholson, J. T., 236*
Norris, G. W., portrait, 140

Orr, R. H., 236*

Pain control, 171
Peltz, W. L., 237*
Pendergrass, E. C., 76
Peters, L., 236*
Pettit, M. D., 236*
Pfeiffer, D. B., memoir of, 200
Philadelphia County Medical Society joint meetings, 231, 231; Strittmatter award (John Royal Moore), 231
Philadelphia Neurological Society, Transactions, 81
Pillsbury, D. M., 235*, 236*, 237*, 237*
Polcino, Sister M. R., 1
Polk, L. D., 235*
Pollution, air, 144; environmental, 151
Potter, H. P., 237*
President's Address, F. C. Wood, 133, 204
Pressman, R. S., 235*
Public health, social goals, 26

Radbill, S. X, 234*, 236*
Raffensperger, E. C., 237*
Rakoff, A. E., 237*
Ralston, E. L., 41
Rathmell, T. K., 235*, 236*
Rauch, J. S., 236*
Ravdin, I. S., 236*
Redman, Dr. John, portrait, 135
Reidenberg, M., 236*
Rhoads, J. E., 234*, 235*
Richardson, Russell, memoir of, 44
Riker, W. K., 236*
Riley, R. L., 236
Rimmer, Dr. William, 89
Roberts, B., 234*, 235*
Roberts, D. W., 236*
Robertson, H. F., memoir of, 131
Rodnan, G. P., 47
Rogers, F. B., 89, 235*, 237*, 237*, 238*
Roll, G. F., 236*
Rose, E., 201
Rose, E. K., 131, 169, 235*, 235*,
Rosemond, G. P., 236*
Rosenow, E. C., Jr., 235*
Rupp, C., 237*
Rush, A., 235*, 237*
Rush, Benjamin, 63, 185
Rynes, S. E., 235*, 237*

Savin, M. B., 96
Schaeffer, J. P., 234*
Scheffey, L. C., 234*
Schnabel, T. B., 234*
Schnabel, T. G., 44, 235*
Shaw, D. L., 236*
de Schweinitz lecture, D. G. Cogan, 233
Secretary's report, 206
Sections of the College, officers, 237; programs, 232
Shearburn, E. W., 235*
Shenkin, H. A., 237*
Shimkin, M. B., 234*, 235*, 238*
Shipman, J. S., 237*
Simmons, V. P., 235*, 238*
Smith, R. R., 236*
Snape, W. J., 112, 235*
Snyder, R. L., 236*
Social, goals in public health, 26
Sphingolipidoses and the Eye, 233
Stainback, W. C., 235*
Stayman, J. W., Jr., 235*
Steiger, W. A., 238*
Stewart, W. H., 26
Stokes, J., Jr., 235*
Stone, R. S., memoir of, 76
Storey, P. B., 235*
Strittmatter award, J. R., Moore, 206, 231
Student, medical, in 1803–1807, 185
Sturgis, K. B., 235*
Sweet, W. H., Mitchell oration, 171
Syrovatka, E. C., 236*

Talbot, T. R., Jr., 236*
Terry, L. L., 236*
Therapeutic, experience, 37
Thompson, C. M., 235*, 236*
Tice, L. F., 236*
Tondreau, R. L., 236*, 237*
Transactions, Philadelphia Neurological Society, 81
Trauma, gout and, 56
Treasurer's report, 208
Tuddenham, W. J., 237*
Tumen, H. J., 235*, 237*

Ullom, J. T., memoir of, 74

Vander Veer, J. B., 235*
Vastine, J. H., 2nd, 126
Venery, gout and, 57
Vietnam, awards of merit, 231

Wade, E. N., 238*

Wade, P. A., 191
Waring, J. I., 185
Willauer, G., 236*
Wise, R. I., 235*, 236*, 237*
Wolferth, C. C., Jr., 237*
Wood, F. C., College of Physicians of Philadelphia, 69, photograph, 70; Address, 180th Anniversary Reception, 133; Chairman, community health forum, 144; President's Address (1968), 204
Wood, H. C., Jr., 237*

Zweiman, B., 237*

Vol. 35, No. 1
(4th Series)

July
1967

TRANSACTIONS & STUDIES

of

The College of Physicians of Philadelphia

Contents

The Medical Mission Sisters (*Kate Hurd Mead Lecture XVIII*)
SISTER M. REGIS POLCINO 1

Social Goals in Public Health (*James M. Anders Lecture XLVI*)
WILLIAM H. STEWART 26

Dr. Cadwalader Evans (1716–1773): Physician and Friend of Benjamin Franklin . . . . . RANDOLPH SHIPLEY KLEIN 30

The Therapeutic Experience of Mr. Henry Jones
ELLIOTT M. HEIMAN 37

Memoirs:

Paul C. Colonna (1892–1966) . . . . . EDGAR L. RALSTON 41

Russell Richardson (1882–1966) . . . . . TRUMAN G. SCHNABEL 44

PUBLISHED AT BALTIMORE, MARYLAND

The College of Physicians of Philadelphia does not assume responsibility for statements or views expressed by contributors to the *Transactions & Studies.*

The communications pertinent to their respective fields are indexed in: *Biological Abstracts; Chemical Abstracts; Index Medicus.*

The Transactions & Studies of The College of Physicians of Philadelphia is published four times a year—July, October, January, April—at Baltimore, Maryland by The College of Physicians of Philadelphia.
Subscription, $5 a volume. Single copies, $1.25.
Publication Office: Mt. Royal and Guilford Aves., Baltimore, Md. 21202
Editorial Correspondence should be addressed to:
The Editor, College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, Pa. 19103
Second-class postage paid at Baltimore, Md. 21202
Printed in U.S.A.

The College of Physicians of Philadelphia

Founded 1787

1967

President

Francis C. Wood

Vice-president

George I. Blumstein

Secretary

George A. Hahn

Treasurer

Kendall A. Elsom

Censors

Truman B. Schnabel

Jonathan E. Rhoads

John H. Gibbon, Jr.

David A. Cooper

Honorary Librarian

Richard A. Kern

Council

The forenamed; Ex-presidential councillors J. Parsons Schaeffer, Thomas M. Durant, T. Grier Miller, and Lewis C. Scheffey; the chairmen of the Standing Committees; and the following

elective councillors

John Franklin Huber

Thomas F. Nealon, Jr.

Alfred M. Bongiovanni

Robert F. Norris

Paul O. Klingensmith

William F. Kellow

Librarian

Elliott H. Morse

Curator of Library Historical Collections

W. B. McDaniel, 2d

Curator of the Mütter Museum and Custodian of the College Collections

Ella N. Wade

Executive Secretary

Olga E. Lang

Superintendent

Theodore J. Kolodziejski

Honorary Director of the Department of Medical Arts

Samuel B. Sturgis

Honorary Legal Counsel

Richard K. Stevens

Stradley, Ronon, Stevens & Young

Committee on Publication

Robert Erwin Jones, *chairman*

Herman Beerman

Edithe J. Levit

Editor of the Transactions & Studies

Robert Erwin Jones

Preceding Number

Vol. 34, No. 4, April 1967

CONTENTS

Presidential Address (*Annual Report*) ..... JOHN H. GIBBON, JR. 125
Organelle Pathology of the Liver (*Alvarenga Prize Lecture XXVI*) HANS POPPER 127
Endotoxin Shock (*Thomas Dent Mütter Lecture LXXIX*) DONALD G. MCKAY 137
Preventive Approach to Community Practice (*Arthur Parker Hitchens Lecture XI*) ..... GEORGE T. HARRELL 142
Notes on a Summer in Vietnam (*William Harvey Perkins Prize Essay VIII*) ..... DAVID J. MCLANAHAN 148
Memoirs
Charles C. Wolferth (1887–1965) ..... FRANCIS C. WOOD 155
George Morris Piersol (1880–1966) ..... T. GRIER MILLER 159
Adolph A. Walkling (1895–1966) ..... GEORGE WILLAUER 161
Max Bernard Lurie (1893–1966) ..... ESMOND R. LONG 163
Stephen Dana Weeder (1896–1966) ..... JAMES S. C. HARRIS 165
William Oscar LaMotte, Sr. (1880–1966) .... FRANCIS HEED ADLER 167
Samuel Timothy Nicholson, 2nd (1887–1966) .... T. GRIER MILLER 169
Annual Reports
Secretary, 171; Treasurer, 173; Library, 177; Mütter Museum and College Collections, 190.
List of College Lectures, 1966 193
Transactions of the Sections 194
Officers, Committees, Sections and Administrative Staff of the College, 1967 196
List of Fellows 200
Suggested Form of Bequest 224
Index to Volume 34 225

Vol. 35, No. 4
(4th Series)

April
1968

MED.
6.10

TRANSACTIONS & STUDIES

of

The College of Physicians of Philadelphia

CONTENTS

180th Anniversary Reception: President's Address
FRANCIS C. WOOD 133
Air Pollution: A Community Health Forum (*James M. Anders Lecture XLVII*) 144
Lessons on Pain Control from Electrical Stimulation (*S. Weir Mitchell Oration XVIII*) . . . . . WILLIAM H. SWEET 171
James Minor, M.D. (1785–1828): The Correspondence of a Medical Student, 1803–1807 . . . . . JOSEPH IOOR WARING 185
Third S. Weir Mitchell Associates Banquet 190
"Finances Is Fun" . . . . . PRESTON A. WADE 191
Memoirs
Edward Thomas Crossan (1890–1966)
JOSEPH L. BEARDWOOD, JR. 198
Damon Beckett Pfeiffer (1878–1966) . . . . . J. MONTGOMERY DEAVER 200
James Ewing Cottrell (1898–1967) . . . . . EDWARD ROSE 201
John A. Brooke (1874–1967) . . . . . WILLIAM L. MARTIN 203
Annual Reports
President's Address . . . . . FRANCIS C. WOOD 204
Secretary, 206; Treasurer, 208; Library, 212; Mutter Museum and College Collections, 229.
List of College Lectures, 1967 231
Transactions of the Sections 232
Officers, Committees, Sections and Administrative Staff of the College, 1968 234
List of Fellows 239
Suggested Form of Bequest 263
Index to Volume 35 264

PUBLISHED AT BALTIMORE, MARYLAND

The College of Physicians of Philadelphia does not assume responsibility for statements or views expressed by contributors to the *Transactions & Studies.*

The communications pertinent to their respective fields are indexed in: *Biological Abstracts; Chemical Abstracts; Index Medicus.*

The Transactions & Studies of The College of Physicians of Philadelphia is published four times a year—July, October, January, April—at Baltimore, Maryland by The College of Physicians of Philadelphia.
Subscription, $5 a volume. Single copies, $1.25.
Publication Office: Mt. Royal and Guilford Aves., Baltimore, Md. 21202
Editorial Correspondence should be addressed to:
The Editor, College of Physicians of Philadelphia, 19 South 22nd Street, Philadelphia, Pa. 19103
Second-class postage paid at Baltimore, Md. 21202
Printed in U.S.A.

The College of Physicians of Philadelphia

Founded 1787

1967

President

Francis C. Wood

Vice-president

George I. Blumstein

Secretary

George A. Hahn

Treasurer

Kendall A. Elsom

Censors

Truman B. Schnabel

Jonathan E. Rhoads

John H. Gibbon, Jr.

David A. Cooper

Honorary Librarian

Richard A. Kern

Council

The forenamed; Ex-presidential councillors J. Parsons Schaeffer, Thomas M. Durant, T. Grier Miller, and Lewis C. Scheffey; the chairmen of the Standing Committees; and the following

elective councillors

John Franklin Huber

Thomas F. Nealon, Jr.

Alfred M. Bongiovanni

Robert F. Norris

Paul O. Klingensmith

William F. Kellow

Librarian

Elliott H. Morse

Curator of Library Historical Collections

W. B. McDaniel, 2d

Curator of the Mütter Museum and Custodian of the College Collections

Ella N. Wade

Executive Secretary

Olga E. Lang

Superintendent

Theodore J. Kolodziejski

Honorary Director of the Department of Medical Arts

Samuel B. Sturgis

Honorary Legal Counsel

Richard K. Stevens

Stradley, Ronon, Stevens & Young

Committee on Publication

Robert Erwin Jones, *chairman*

Herman Beerman

Edithe J. Levit

Editor of the Transactions & Studies

Robert Erwin Jones

Preceding Number

Vol. 35, No. 3, January 1968

CONTENTS

Dr. William Rimmer and His *Art Anatomy*.....FRED B. ROGERS 89

The *Mémoire sur les différents genres d'asphyxica* of Doctor Jean-Francois Coste.....HAROLD J. ABRAHAMS AND MARION B. SAVIN 96

Reynell Coates (1802–1886): Politician, Poet, Editor, Naturalist, Lecturer and Physician.....WILLIAM J. SNAPE 112

Dr. Samuel Duffield (1732–1814): Member of the First Medical Class Graduated in America.....RANDOLPH SHIPLEY KLEIN 119

Memoirs

Karl Musser Houser (1893–1967).....JACOB H. VASTINE 126

Douglas Macfarlan (1886–1966).....FREDERIC H. LEAVITT 129

Harold Frederick Robertson (1900–1966)..ELIZABETH KIRK ROSE 131